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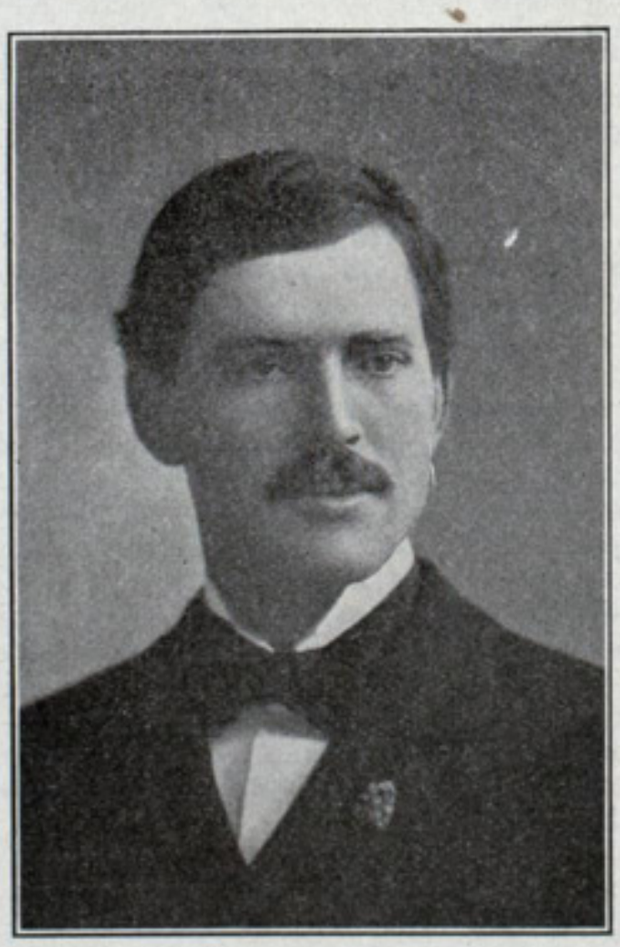
CORTELYOU AND GARFIELD.

About two months from now the new department of commerce will be in operation. Meanwhile the organization is being perfected with the utmost dispatch. Of course a fair part of the organization is standing, as the major portion of the department merely consists of the transfer of bureaus. These bureaus include lighthouse board, lighthouse establishment, the steamboat inspection service, the bureau of navigation, the United States shipping commissioners, the national bureau of standards, the coast and geodetic survey, the commissioner-general of immigration, the immigration service at large, the bureau of statistics, the census office, the department of labor, the fish commission and the bureau of foreign commerce. Of course chief interest centers in the new bureaus of manufactures and corporations. The chief of the bureau of manufactures has not yet been appointed. The chief of the bureau of corporations is Mr. James R. Garfield, and it is doubtful if a better selection could have been made for this important office. Mr. Garfield is temperate and energetic, courageous and cautious. Manufacturers are, of course, deeply interested in the new bureau of manufactures. This bureau will take over the consular service, which as every one knows, is in need of thorough cleaning. Some mighty poor material has been utilized to make consuls. Indeed, men who the community would not tolerate in office at home have been sent to represent the nation abroad. Special fitness has never been a consideration in the consular service of the United States and it has been a common practice to send as American consul to a foreign country a man who had no acquaintanceship with its language or its customs and probably no definite idea of its whereabouts The consular service has been a vehicle for the payment of political debts. If any service should be free from spoils it should be the consular service. In this respect the United States could well afford to tear a leaf out of Britain's book.

Mr. George B. Cortelyou.



Mr. James R. Garfield.

Mr. George B. Cortelyou, who has been selected as the secretary of commerce, will justify the faith reposed in him by the president. He is a remarkable man. It is nothing against him whatever that seven years ago he was a short-hand writer in the department of commerce. He was as much Cortelyou then as he is now– a man of method and orderliness, a cool man, precise as a machine, and always attacking his work with the utmost directness. The past seven years have vastly enriched his experience. Time and time again he has managed the greatest corporation on the American continent—the government of the United States. President McKinley leaned on him wholly, and frequently left everything to him. Cortelyou will think out his plans very thoroughly before he moves at all. He will be thoroughly prepared for any contingency that arises and he will assume no position whatever that he is not abundantly able to defend. He is only forty years old with his days and nights divided into relays of work and rest. He appears to be working all the time, for his office hours at the white house were from 9 a. m. to midnight and later. Even at midnight of the most strenuous war days at the white house he had never turned a hair. He will unquestionably select as his assistants the most competent men that he can persuade to enter the department. Already he has said that his department is one in which the office should seek the man. He is not himself a politician and owes nothing to political favor. He has won his spurs solely upon merit and everyone will come into his department by the same road.

SUBMARINE TO TRAVEL UNDER THE ICE.

The daily press is much given to the parading of nonsense. There are degrees in nonsense as in all things else, but undoubtedly the most preposterous nonsense of all is the constantly reiterated report that the north pole is to be searched for in a submarine boat. Think of it. There is no reservation of statement at all. The announcement is made from Berlin that a novel polar expedition is projected by two German explorers who rely upon a specially-constructed submarine boat to overcome the difficulties hitherto encountered in reaching the north pole. The only thing supporting equanimity in viewing this statement is the fact that it comes from Germany. It was Ingersoll who said that one could give two German professors a box of matches and a bushel of shavings and they would be unable to start a fire. The leaders of the expedition, it is related, are Herr Scholl of Munich and Dr. Anscheutz Kuempfe. There is no proof that these are the two gentlemen Ingersoll referred to or not, but it would not be surprising if they were. Dr. Kuempfe, it appears, has received sufficient financial support for the construction of a novel submarine boat to travel beneath the icebergs of the Atlantic. Undoubtedly Dr. Kuempfe has latent powers as a promoter, which in a fruitful soil like the United States would enable him to organize companies to extract green cheese from the moon. Herr Scholl, however, is not to be outdone by Dr. Kuempfe. He has organized a separate expedition to erect a wireless telegraph station between latitudes 78 and 80 to keep in constant communication with the submarine, which also is to be equipped with wireless apparatus. It is not stated how the submarine is to receive messages or send them while under the ice but that is doubtless a mere detail. All this is gravely published in the newspapers and introduced with sober headlines. Now what is the status of the submarine boat as far as we have actual knowledge? It has remained stationary on the bottom of a shallow body of water for a few hours, the cramped crew meanwhile suffering the tortures of the damned and almost breaking down both physically and mentally as a result of the experience. When in motion it has no sense of direction and its radius of action, incoherent, confused and blind as it is, is limited to about 20 miles No food can be cooked in it, no fire can be kept, and yet these two intrepid German souls are going to brave the cold and the dark and find the pole blindfolded under the ice. The pole, like the navies of the nations, is safe from the submarine.

LOAN TO THE CRAMPS.

Mr. J. Pierpont Morgan and the First National Bank of New York have negotiated a loan to the William Cramp & Sons Ship & Engine Building Co. of Philadelphia, the loan to consist of $5,000,000 in cash at once and $2,500,000 at a future period. The Cramps have been hampered for some time by a lack of working capital. The amount of money tied up in the building of ships is large. The material which has to be purchased and paid for and the labor which has to be settled weekly are items which run up when it takes over a year for the completion of almost any of the contracts which they undertake. For this reason the Cramp company has often outstanding loans amounting to $2,000,000 or more. These loans, represented by negotiable paper, are to be taken up at maturity by the $2,500,000 that is provided in addition to the working capital of $5,000,000. The contract under which the money is to be furnished provides for a complete re-organization of the company. The board of directors will be changed and a voting trust will be established, so that the men who are advancing the money will have a word to say in the administration of the property. The trustees, it is understood, will be George F. Baker, president of the First National Bank of New York, Edward T. Stotesbury of Drexel & Co., New York, and Richard H. Rushton, president of the Fourth National Bank of Philadelphia.

CLYDE SHIPS STILL HIGH-PRICED.

No Reduction in Cost of Material—The new Cross-channel Turbine Steamer Queen—Light Dues will not be Abolished—Big Ships for Japanese Navy.

Glasgow, April 13.—New orders for ships are still few in number, as prices of material are very high, notwithstanding the recent drop in pig iron, which was due partly to reports of a break in America. It is computed that during the past few weeks the prices of new tonnage have gone up to the extent of about 7s. 6d. a ton. A month or so ago several contracts were taken at prices which at present costs of material would result in certain loss. About a month ago an order was placed on the northeast coast for the construction of a 4,000-ton deadweight steamer at £6:7:6 per ton; for a similar vessel builders now require about £6:16. a ton.

Yet another advance has been made in the building of turbine steamers on the Clyde. This week the new turbine steamer Queen was launched by Denny & Bros., Dumbarton, for the Southeastern & Chatham Ry. Co. She marks a departure in cross-channel steamers. Hitherto these vessels have all been of the paddle or ordinary twin-screw type, but the new vessel is an enlarged example of the turbine boats which have proved so successful for river purposes on the Clyde. The Queen is 310 ft. long, with a molded breadth of 40 ft. and a depth of 25 ft., and has a complete awning deck. As regards arrangements for passengers—elaborately fitted cabins in deck houses, state rooms heated by steam, electrically lighted, supplied with electric call bells, etc.—the new vessel is modern in all respects. For convenience in canting and backing out of harbor there is a large bow rudder, worked by steam steering gear, controlled by a wheel on the flying bridge. As very heavy mails have to be frequently handled on this service, the vessel is provided with derricks and two large winches for dealing promptly with this matter. The machinery consists of three Parsons turbines having three lines of shafting. In maneuvering the center shaft runs free, the two side shafts then take the place of ordinary twin screws, and the maneuvering power is as good as in ordinary twin screws while in the going astern there is none of the usual vibration. As to speed, the builders have undertaken that this vessel will have an average sea speed of 21 knots. At the launch, Mr. Peter Denny said this was the third turbine steamer his firm had built, and the first turbine channel steamer. It was not their custom to crow beforehand, but they had already built two turbine steamers which had been distinguished successes, and they saw no reason why the enterprise of the Southeastern & Chatham Ry. Co. should not meet with its fitting reward in this, which they hoped would prove the fastest steamer to cross the English channel. They all knew that the passengers who crossed between France and England were, unduly frightened at the effect of the sea, and the shortest passage naturally had the pull, as had the quickest steamer. It was with the view of having such a steamer that the company had entrusted them with the building of the Queen.

A TELEGRAPH STEAMER.

A twin-screw telegraph steamer has just been launched from the yard of Napier & Miller, Ltd., namely, the Henry Holmes, built for the West India & Panama Telegraph Co., Ltd., London. The principal dimensions are: Length on load water line, 210 ft.; breadth, 31 ft. 6 in.; depth, 18 ft. 6 in.; with a gross tonnage of about 1,000 tons. The vessel has been built to Lloyd's highest class and to board of trade requirements. She is fitted with three large circular tanks in the holds, which are suitably arranged for the stowage of cables. The cable machinery is in itself a special feature, the main engines being placed forward on the upper deck, while at the bow and stern there are large sheaves and drums fitted for paying out and picking up the cables. The ship is fitted with every modern mechanical and scientific appliance for cable laying and repairing. The machinery is being supplied by Messrs. David Rowan & Co., Glasgow. The Henry Holmes is built to replace the Grappler, which was lost with all on board during the recent eruption at Martinique.

LIGHT DUES WILL NOT BE ABOLISHED.

The scheme for the proposed abolition of British light dues has, I am sorry to say, failed. Mr. Charles M'Arthur's bill had for its object to effect an important and much needed reform in the light service of the United Kingdom. It proposed to transfer the administration of light houses, buovs and beacons to the board of trade, and to transfer to the government all property in the light houses which is at present held by the three light house boards. It also sought to abolish light dues and provide for the payment of the charges of the light service out of public revenue. The bill further proposed to constitute committees representing ship-owning, mercantile and navigating interests to advise the board of trade in regard to matters falling under their cognizance These committees were to be advisory only and would not in any way interfere with the discretion of the board of trade. There are at present three lighthouse boards—Trinity House, the commissioners of northern lighthouses and the commissioners of Irish lighthouses. Dues are payable by those concerned in the ships which come to our ports and it is by these dues that the lights are maintained. The board of trade has a certain supervising control over the other boards, having to approve of any financial scheme for the erection of new works and to settle any points of difference. But Mr. M'Arthur's reform, which is backed by the whole shipping community and was advocated by the subsidies commission, was opposed by the chancellor of the exchequer, because it would throw a charge of £500,000 per annum on the treasury. So, on a party vote, the bill has been rejected by the house of commons; but the matter will not rest there.

QUESTION OF PROPER BALLASTING.

As bearing on the light load line inquiry, to which I have referred in recent letters, I may be permitted to refer to a paper by Mr. S. J. P. Thearle on the ballasting of steamers for the North Atlantic voyages. The McKinley tariff reducing west-bound traffic increased the importance of the subject, and Mr. Thearle suggested that the increased frequency of failures of shafts was in part due to the racing consequent on light loads or improper trim. Other damage was done, including "pounding" or "thrashing" of the forward part of the bottom, and Lloyd's had consequently insisted on increased structural and local strength. There appears to be a prevalent opinion that in an ordinary tramp steamer a total deadweight of ballast equal to about one-third the deadweight cargo carrying capacity would give a good ballast immersion when on a winter Atlantic voyage, provided the ballast is so placed as to trim the vessel not more than 4 ft. to 5 ft. by the stern, and to immerse two-thirds of the diameter of the screw propeller. This ballast includes the bunker coal on board when starting on the voyage, and it is besides, usually made up of sand or rubbish ballast also in addition to the water carried in the double bottom and peak ballast tanks. An examination of cases of vessels so ballasted and sent to sea showed that the mean ballast immersion at starting on the voyage was about 0.55 to 0.6 of their mean load draught, and was, of course, less at the end of the run. Vessels so ballasted and trimmed about 4 ft. by the stern were said to have made good passages, even in winter, but in cases where the total ballasting had been lower than 0.3 of the deadweight, damage, consisting chiefly of started shell riveting, had often been sustained. Mr. Thearle, after describing the several methods of ballasting adopted in the design of ships, says that the crux of the whole question is that of depending wholly on the care and attention of officers and crew rather than the alternative of providing such precautionary measures as would prevent serious evil resulting from the negligence or mistakes which unfortunately occur, not only on shipboard, but everywhere else where men were employed. It was said that some ship owners had for purposes of ballasting even gone so far as to partially fill the afterholds of steamers with water, free to lash from shaft tunnel to side of vessel with every roll she made, and it was alleged that no damage had resulted. But important as is a sufficiently deep immersion to a vessel, such a method of ballasting as that could scarcely be recommended as prudent or desirable. It is of good omen, however, to observe that in the great majority of cases, and in the absence of any compulsory legislation on the subject, the ship owners of this country are giving serious attention to the ballasting of their vessels, and if the subject were left to ship owners and underwriters to work out a solution of the problem between themselves, there can be little doubt that the evolution of the British mercantile steamer would proceed, in the future as in the past, upon lines of efficiency and safety.

BIG SHIPS FOR JAPAN.

With regard to the Japanese navy program it is stated that three battleships will be ordered this year from British builders, and that these vessels will be of about 16,000 tons and of 18¼ knots speed. They will thus closely resemble the King Edward the Seventh class, the prototype of which is to be launched at Devonport by the Princess of Wales. This seems a large ship for Japan, but Russia is laying down several ships of 16,000 tons for the far eastern squadron. The Japanese battleships will be completed within three years, but the laying down of three armored cruisers will be deferred for a year. These cruisers are to be of 11,000 tons and 22½ knots speed, and there is a national desire to have them built in Japan. This is an undertaking to which the existing ship building yards are scarcely equal, so that it is not probable that more than one will be constructed there, and by arrangement with some British firm who will be responsible for the design, etc. It is intended to build in Japan two protected cruisers of 5,000 tons and 23 knots. All the ships are to be completed by 1913.

The French government is to expend a sum of £12,000 on the construction of a new experimental tank in connection with the French navy in the Grenelle district of Paris, where ground has been acquired sufficient to enable a tank 492 ft. long to be constructed, with accessories. This tank is to enable wax models to be tried on the principal introduced by the late Dr. Froude, and first applied in connection with British warships. Holland, Italy, Russia, the United States and Germany, as well as France, have adopted the idea, and among private firms the example of Denny of Dumbarton has been followed by John Brown & Co. of Clydebank, and by the North German Lloyd at Bremerhaven.

Naval Constructor Capps of the New York navy yard has put on an extra force of men and everything is being done to rush work upon the battleship Connecticut.

LAUNCH OF THE WEST VIRGINIA.

Newport News, Va., April 22.—The 15,000-ton armored cruiser West Virginia, the largest ship ever put overboard for the United States navy and the first to go into the water of the six armored cruisers authorized by the fifty-fifth congress, was launched Saturday afternoon at the yard of the Newport News Ship Building & Dry Dock Co. The throng of spectators surrounding the ways on which the ship was built and lining the piers of the ship yard commanding a view of the launching slip, together with the excursionists who crowded the decks of excursion steamers, tugs and sail vessels, was larger than that which saw the twin battleship Kearsarge and Kentucky go overboard here March 24, 1898. Various estimates placed the number of spectators at from 25,000 to 35,000. Miss Katherine V. White, of Charleston, W. Va., daughter of Governor A. B. White, named the cruiser, using the traditional bottle of champagne. The launching was successful in every particular and could not have been more perfectly planned. Following the event at the ship yard a post-launching banquet was given at Hotel Chamberlin, Old Point Comfort, where 500 guests sat down at the covers. On the platform erected at the bow of the ship for the ship building company's guests were probably 600 people, among them a number of distinguished men.

The more prominent of the guests were Gov. White of West Virginia; Gov. A. J. Montague of Virginia; United States Senators Martin, Elkins and Scott; Assistant Secretary of Navy Darling; Rear Admiral O'Neil, chief of the bureau of ordnance; Rear Admiral Taylor, chief of the bureau of navigation; Judge Advocate General Lemley; Rear Admiral Harrington, commandant of this naval station; Count von Oriela, captain commanding the German cruiser Gazelle, and the officers of his ship; President C. B. Orcutt of the Newport News company; Edwin Cramp of Philadelphia and President George W. Stevens of the Chesapeake & Ohio Ry.

Gen. Supt. Walter A. Post of the Newport News Ship Building & Dry Dock Co. personally attended to all of the arrangements here for the launching. The large force of skilled men who prepared the ship prior to the launching for her trip down the ways was directed personally by Mr. M. V. D. Doughty, superintendent of hull construction.

Until congress authorized the construction of the West Virginia, the Maryland, the Colorado, the South Dakota, the Nebraska and the California, the navy of the United States practically stood still in the matter of armored cruisers of high speed from the time the Cramp ship yard turned out the Brooklyn and New York. Today eight powerful and speedy armored cruisers, of designs which in all respects will compare favorably with the armored cruisers of foreign navies and in many respects will eclipse them, are being built.

The principal dimensions of the West Virginia and the other ships of her class are as follows: Length on load waterline, 502 ft.; beam, extreme, 69 ft. 6½ in.; draught on normal displacement of 13,676 tons, 24.1 ft.; full load displacement, ammunition and stores aboard (tons), 15,104; designed indicated horse power, 23,000; speed (knots), 22; coal supply, bunker capacity (tons) 1,850; complement of officers, 47; complement of seamen, marines, etc., 783.

The ship will be propelled by two sets of twin-screws, vertical, inverted triple-expansion direct-acting engines designed for 23,000 H. P., having a stroke of 4 ft. and running at 120 revolutions a minute. Each engine will be placed in a separate watertight compartment and will have cylinders 38½ in., 63½ in. and two 74 in. in diameter. Steam at 250 lbs. pressure to the square inch will be supplied from sixteen water-tube boilers of the Babcock & Wilcox marine type. The boilers will be arranged in six watertight compartments, the total grate surface being 1,600 sq. ft. and the total heating surface 70,944 sq. ft. There will be four funnels, standing fore and aft.

The main battery will consist of four 8-in. breech-loading rifles and fourteen 6-in. rapid-fire rifles. The 8-in. guns will be mounted in pairs in two electrically controlled elliptical balanced turrets of the Hichborn type, placed on the middle line of the ship, one forward and one aft, each having an arc of train of at least 270°. On the upper deck at the corners of the superstructure there will be four 6-in. guns, mounted in sponsons, one in each corner, and having either a bow or stern fire, with an arc of train of at least 145°. There will also be the gun-deck battery of ten 6-in rifles forming a broadside, five on each side, the arc of fire of each being not less than 110°, or at least 55° forward and 55° abaft the beam, except in the case of the forward pair, which are so arranged as to be capable of direct ahead fire. There will be a formidable secondary battery, consisting of eighteen 3-in. breech-loading rifles, twelve 3-pounders, besides four 1-pounder automatic guns, four 1-pounder rapid fire guns, six Colt automatic guns, two machine guns and two 3-in. field pieces. The 1-pounders will be placed in the fighting tops.

For the guns there be carried 500 rounds of 8-in. ammunition, 2,000 rounds of 6-in., 4,500 rounds of 14-pounder, 6,000 rounds of 3-pounder and 2,000 rounds of 1-pounder heavy ammunition. The magazines have been especially designed with a view to absolute security in all climates, provision being made to reduce their temperatures, if necessary, by means of connections with the cooling plant.

The armored protection of the West Virginia will consist of a waterline belt extending 5 ft. below and 4 ft. above the normal load line and from stem to stern. The maximum thickness will be preserved at 6 in. for a depth of 6 ft. from the top. The armor will taper at the stem and stern to a thickness of 3½ in. The armor on the turrets, with inclined port plates, will be 6½ in. thick on the port plate and 6-in. on the sides and rear. At the ends of this armor there will be armored bulkheads 4 in. thick, forming an inclosed citadel or casement, within which the ten 6-in. guns of the broadside battery are mounted. The four 6-in. guns on the upper deck, at the corners of the superstructure, will be protected by 5-in. casemates. The barbettes of the 8-in. gun turrets will have a uniform thickness of 6 in., and the ammunition tubes, extending from the turret to the protected deck, will have a uniform thickness of 3 in.

The conning tower armor will be 9 in. in thickness, with a 2-in. nickel steel top, and from its base to the protective deck there will be an armored tube 5 in. thick and of sufficient diameter not only to permit of speaking tubes, etc., but also access to the conning tower from below the protective deck. The armor of the signal tower aft will be 5 in. thick. A complete oil tempered and annealed nickel steel protective deck, 1½ in. thick on the flat and 4 in. on the sloping sides, is to extend the entire length of the vessel, and a cellulous cofferdam belt 3 in. thick, as an additional protection against waterline damage which might effect the stability, will be worked along both sides above the protective deck for the entire length of the vessel.

TALK WITH MR. CORNELIUS SHIELDS.

Mr. Cornelius Shields has seen fit to deny the report that he withdrew from the Dominion Iron & Steel Co. because he had no confidence in the future of the enterprise. On the contrary he is retaining all his holdings of the company's stock. In an interview in the Montreal Star he said:

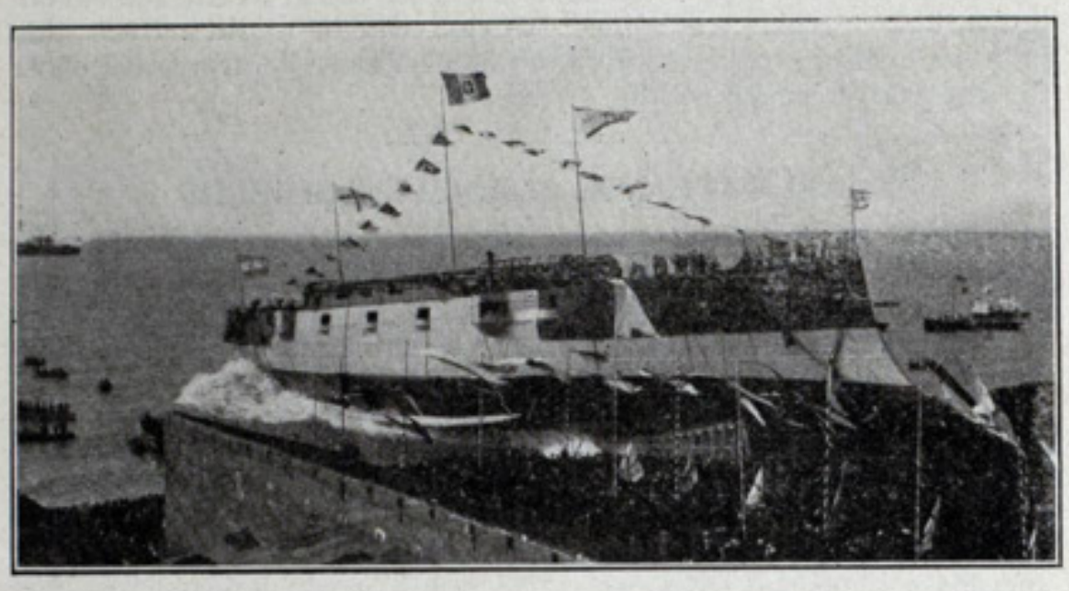
"I consider that the Dominion Coal Co. with mines situated on tide level has advantages such as can be shown by no other company in America. In the case of the big American companies there are always big charges for railway freight, while the Dominion Coal Co. can take the coal right out of the mines and place it on the steamers. The uphill work, however, so far as the coal company is concerned, has now been accomplished, and this is one of the reasons why I decided to take up the new work at the Sault. It is now on a good paying basis, earning 8 per cent., with every possibility of earning 11 or 12 per cent. in the near future. No matter what happens it cannot be placed on any lower level than an 8 per cent. one. Then, as regards the steel company, I am convinced that its possibilities are entirely in the future. It is now almost on the verge of passing from being the manufacturer of raw material to being the manufacturer of the finished product. By the month of September or at the very latest at the beginning of October, the mills now under construction will be in operation and the large profits now being made by the American manufacturers who are buying the raw material will be made by the Dominion company. In the manufacture of steel it will not be necessary for the company to import a single ton of Swedish ore. It will be in this period of the existence of the steel company that the present lease will be found just as satisfactory to the shareholders of the coal company as to those of the steel company. Then it will be the proper time to take up the question of the amalgamation of the two companies. It is with much regret that I leave the works at Sydney. for my relations with all the officials, as also with the men, have always been of the most friendly nature."

Speaking of the Consolidated Lake Superior Co. at Sault Ste. Marie, Mr. Shields said:

"The result of my recent visit to the works at the Sault before accepting the offer made me by the directors of the company convinced me that the possibilities are almost infinite. There are, however, a great many problems that must yet be solved. The greatest problem of all is undoubtedly that of the steel and iron. It is intended that open-hearth furnaces, similar to those at Sydney, should be installed as soon as possible, and when they are the steel that will be produced from the ore of the Helen mine will be equal in quality to any produced in America. Then again, the blast furnaces next to the steel rail mill are now nearing completion, and once the mill is in operation it will be run full time right along. It should undoubtedly prove one of the largest profit-makers the company will have. The rails that will be turned out will be equal to any manufactured in the United States or Germany. The other works are almost too numerous to deal with them one by one. I consider, however, that with careful attention each one will be able to pay its own operating expenses and at the same time show substantial profits. But there is one thing that applies both to the Dominion Iron & Steel and Consolidated Lake Superior companies, and that is that the Dominion government should grant their industries greater protection. If Canada is to become a great industrial country, and there is not any reason why it should not, greater protection must be afforded. The American manufacturers realizing the possibilities of Canadian industry, are advocating free trade in order to retain control of the markets and stop the progress of the present big industries. It is the duty of Canadians to prevent them from doing so, and it can be done if more protection is granted. The general feeling is that the government will ask parliament to grant a fair protection to steel during the present session."

LAUNCH OF THE ARGENTINE CRUISER MORENO.

Sampierdarena, Italy, April 1.—The armored cruiser Moreno, just launched at the building yard of Messrs. Ansaldo at the Sestri Ponente near Genoa for the Argentine navy, is a sister ship of the Rivadavia, launched from the same yard last October and which, so far, holds the record for quick work, having been laid down on March 10, 1902, and launched within seven months, whilst at the same time the second vessel had also to be pushed forward. These two vessels belong to the far-famed Garibaldi class, of which type four vessels have already been completed from the same yard, namely: Garibaldi, Argentine navy, with cylindrical boilers; Christobal Colon, Spanish navy, with Niclausse boilers; Pueyrredon, Argentine navy, with Belleville boilers; Giuseppe Garibaldi, Italian navy, with Niclausse boilers. Many improvements have been made on the original type, especially on the armament and its fittings, in the means of supplying ammunition to the different pieces, in the electric arrangements and production, etc. The principal dimensions of the vessels are as follows: Length, extreme, 108.86 meters; length, between perpendiculars, 104.86 meters; width, over armor, 18.70



Launch of the Argentine cruiser Moreno.

meters; mean draught, 7.30 meters; displacement on metric tons, 7,700. The armor plates are hard-faced by the latest process and furnished by the Terni Steel Works. There is a central armored redoubt which extends for about half the length of the ship, the belt being 150 nulometers thick at the sides and the athwartship plates 120 nulometers. Outside the redoubt there is a belt extending 1½ meters above and below the water line, of thickness commencing with 150 nulometers and diminishing to 80 nulometers at the extreme ends. The armored deck over the redoubt is formed of two plates with a total thickness of 40 nulometers and beyond this is of 20 nulometers thickness to the extreme ends.

The armament is as follows: Four 2 F. 8-in. guns in the two barbettes fore and aft; ten 2 F. 6-in. guns in the main battery; four 2 F. 6-in. guns on the upper deck; four 2 F. 3-in. guns at the ends of the main battery; six 2 F. 3-in. guns on the upper deck; two Maxims in the fighting tops; two 3-in. guns for land use. And there are also four torpedo tubes for above water discharge in armored casemates. There are two main magazines situate directly under the fore-and-aft barbettes, and four for the secondary armament, two being in center of vessel, one forward and one aft.

The electric plant is considerably more powerful than has hitherto been fitted in vessels of this class and is divided into two portions, three large dynamos being placed forward under the armored deck and two others for general use on the upper deck midships. The electric current furnished by these is used for general lighting and search light purposes, for the training gear of guns, for the night sights, for firing the guns, for the ammunition hoists, for furnishing power to the workshop tools, the ventilating fans, the ash hoists, the air compressors and for speed and direction indicators from the engine room.

The propelling machinery is of 14,000 I. H. P. and has been constructed at Messrs. Ansaldo's works at Sampierdarena. It should give the vessel a speed of over 19 knots an hour. The coal capacity is about 1,100 tons and the radius of action at 10 knots speed is about 9,000 miles.

The launch was an entire success, and took place in beautiful weather. The duke of Abruzzi was present and the vessel was named by Madame Galindey, wife of Capt. Galindey, a member of the Argentine commission. There were also present Commodore Garcia, the president of the commission, Marchese Garroni, the prefect of Genoa, Gen. Cerruti, commanding the district, Capt. E. Zezi, commander of the armorclad Lepanto, which had been sent by the Italian minister of marine to salute the new cruiser as she entered the water, Commendatore C. M. Bombrini and Senator Giovanni Bombrini, owners of the Ansaldo's establishments. After the launch the Moreno was towed to Genoa and moored alongside her sister ship, the Rivadavia, and the Turkish battleship Messoudyeh, which has been recently reconstructed and re-armed by Messrs. Ansaldo and is now waiting orders to leave for Constantinople.

The completion of the vessel is to be pushed forward with all speed, and if these two ships are incorporated in the Argentine navy, they, with their sister vessels, will form a very formidable fighting unit, as there will be a squadron of six vessels, composed of the Garibaldi, General S. Martino, General Belgrano, Pueyrredon and the present two vessels in construction, the Rivadavia and Moreno, all of the same class and approximately the same speed and armament.

Argentina having patched up her differences with Chili, has no special need now for this cruiser, and it is to be offered for sale. It has been suggested that the United States buy it. Chili, of course, is in the same boat, and the battleship Libertad, recently launched at the works of Vickers Sons & Maxim, Barrow, England, for that country and lately described in the Review, is also offered for sale.

CAPACITY OF NEWPORT NEWS DRY DOCKS.

Newport News, Va., April 22.—Visitors to the ship yard when the West Virginia was launched Saturday saw a striking illustration of the superior facilities of the Newport News Ship Building & Dry Dock Co. for handling ships in dry dock. In dock No. 1 was the seven-masted schooner Thomas W. Lawson, the only seven-sticker and the largest sailing vessel in the world. In No. 2 were docked, end to end, the first-class battleship Missouri, which is preparing for her builder's trial, and the German cruiser Gazelle, which is being overhauled. The significance of the scene in dock No. 2 was generally commented on by visitors and by the speakers at the post-launching banquet. It is the first time that a war ship of another power has been docked in the same basin with a United States warship. The fact that the ship yard is equipped to accommodate three such large vessels in its docks was a surprise to naval officers and shipping men who came here from other cities to see the launching.

An announcement is expected shortly relative to the time of the launching of the armored cruiser Maryland, a sister of the West Virginia. The Maryland is only several points behind her sister and should be ready to go overboard in the next month or two.

PICKED UP A GRANITE BOULDER.

Last October the Leyland liner Iberian stranded at Red island in the St. Lawrence river and when docked in the government dock at Levis the granite boulder, depicted in the accompany illustration, was found embedded in the hull. It was 3 ft.

Granite boulder wedged in the Iberian's hull.

6 in. in diameter and practically circular in shape. It is a beautiful specimen of granite and is now on exhibition at the government yard at Levis. The Iberian left Quebec last week for London on her first trip since the accident occurred.

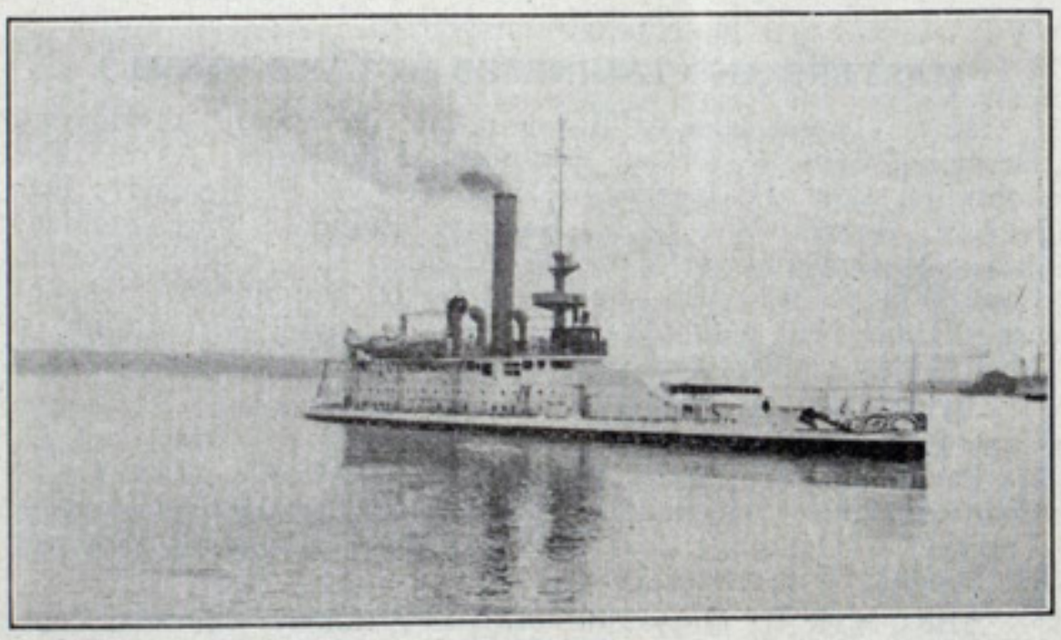
A London dispatch announces that the Cunard Steamship Co. has instituted the experiment of running certain of its vessels for second and third-class passengers only. The Aurania has begun the experiment, the second-class passengers occupying what has hitherto been the first-class accommodations, and the third-class passengers having two-berth, four-berth and six-berth rooms. The Carpathia, which is now being completed on the Tyne, will sail alternately with the Aurania in this service. The company proposes that all its vessels sailing on Tuesdays from Liverpool will follow this plan. It is understood that the company regards second and third-class passengers as being more profitable than first-class passengers, and hopes, by the plan it has adopted, to attract business.

ANNUAL MEETING OF STEEL CORPORATION.

At the second annual meeting of the stockholders of the United States Steel Corporation, held in Hoboken this week, a unanimous vote was cast on all matters that came up. The vote amounted to 1,021,268 shares of preferred and 2,404,258 shares of common stock, or more than 37 per cent. of the entire preferred and 47 per cent. of the entire common stock outstanding. Besides electing directors the stockholders approved the purchase of the stock of the Union Steel Co. and the stock and bonds of the Troy Steel Products Co.; the plan to expend $36,000,000 for improvements to plants, which will increase the annual production by 2,700,000 tons of products, add $7,000,000 yearly to earnings and save $5,000,000 in the cost of manufacturing, and an amendment to the by-laws making the fiscal year of the corporation correspond with the calendar year. Mr. E. H. Gary, chairman of the corporation, presided. Others present included President Charles M. Schwab, Comptroller Filbert, Treasurer Trimble, Francis Linde Stetson and about thirty other stockholders. Mr. Gary, in answer to a stockholder's question, explained that the purchase of the Troy Steel Products Co., on account of the furnace capacity of the Troy plant, gave the corporation a complete supply of material for its plant at Worcester, Mass. Finding that the plant could be secured for about $1,000,000 the purchase was made.

These retiring directors were re-elected to serve for a period of three years: Francis H. Peabody, Charles Steel, W. H. Moore, Norman B. Ream, P. A. B. Widener, James H. Reed, Henry C. Frick and William Edenborn. James Gayley was elected a director of the third class for the three years ending in 1904, to succeed Percival Roberts, resigned, and Robert Bacon was made a director of the first class for the three years ending in 1905, to succeed William E. Dodge, resigned. The vacancy in the board caused by the death of Abram S. Hewitt was not filled.

The directors will meet to elect officers on May 5. Mr. Gary, chairman of the board, is authority for the statement that Mr. Charles M. Schwab will be re-elected president of the corporation.



The monitor Nevada which goes in'o commission this week.

MATTER OF INEBRIETY OF SAILORS.

English consuls in Hong Kong and other seaports of the flowery kingdom declare that Chinese are taking the berths of British sailors and firemen on the majority of the regular liners, and even on some of the tramp steamers. Inebriety of the members of British-born crews, resulting in insubordination, disorder, and causing trouble to the officers as well as to the consuls, is said to be the reason of the advent of the Chinaman, the Laskar and the Malay in several forecastles. Doubting that those orientals ever heard of "no-breakfast" fads, and wholly repudiating the assertion of envious and prejudiced British tars that their substitutes are able to subsist on air, it is well known that a yellow, brown and black-hued crew, being almost vegetarians, is easily and cheaply fed, which is, of course, something that appeals even to the most philanthropic and benevolent ship owner. Their meekness and obedience recommend them to those in command, and their unquestioned sobriety is in pleasant contrast to the behavior in port of those whom they superseded. All captains unanimously declare that Chinese, Malays and Laskars are excellent sailors, and, in fine weather, the equals of any white crew. In stormy weather—to quote Kipling—"that is another story." An ancient master mariner who once shipped a crew of Malays on board his vessel, a large, lofty wooden bark, related some incidents of the trip:

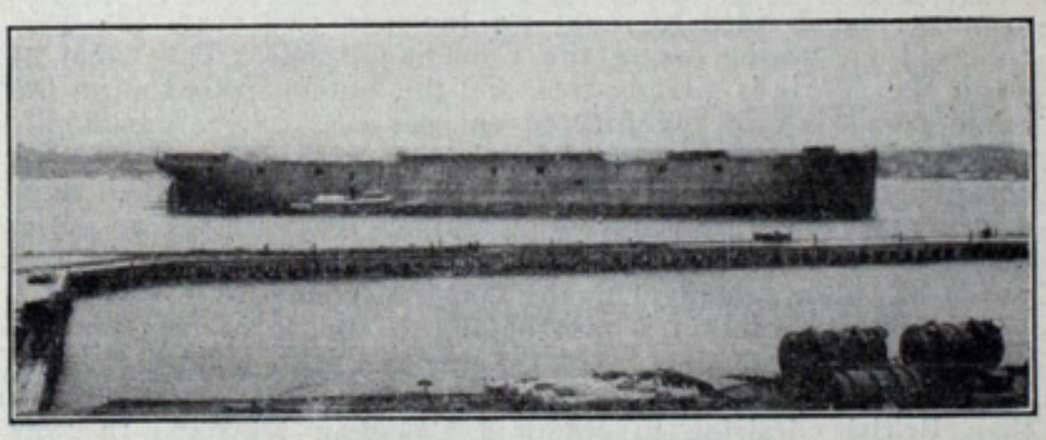
"Upon leaving Batavia I did not much fancy the appearance of the crew, and both my mate and boatswain were astonished that not one sailor would directly obey a command, but always looked for orders from one of their colleagues. Before we passed Anger point, however, the riddle was solved and we had no further trouble. It appears that each watch had chosen a chief, a captain, a mate, or whatever they called it from among their own number, and it was only through these men that I, the mate, or the boatswain could assign the crew to their several tasks. My boatswain called it a second-hand way of managing a ship, and because all Malays looked alike to him he sewed a strip of canvas on the 'sarong' of each of those headmen. When both watches, or all hands, were on deck, the chief Malay of the starboard watch seemed to have a little more authority than the other knight of the canvas strip, perceiving which my irrepressible boatswain immediately added yet another patch of cloth 'to remember him by,' as he said. They would not eat pork; very little meat; refused to be hurried, and prayed every morning at sunrise with their faces toward the east, kneeling upon little mats they brought along from Batavia.

"Yes, they were good sailors in many respects, and it was seldom that I wished to have a white crew on board. One day, for instance, considering it needful to take in the foreroyal, the yard was soon lowered and the sail clewed up. One man went up to furl it but when getting on the weather foot rope he stood there idly gazing round. Soon after two more fellows followed and the first Malay did not even get the gaskets ready until his two mates had joined him. One white man would have furled that sail but as three Malays had been ordered aloft the first man there saw no reason for commencing work until the others arrived upon the scene. But set those fellows upon the deck in hot weather and they could give most white sailors points in doing so-called 'fancy work,' stropping buckets to cross-pointing."

Thus endeth the old captain's yarn. And now as to drunkenness among British crews. In every British forecastle there must be a copy of the so-called "articles" in a conspicuous place, and at the bottom appears in large letters "liquor allowed at the master's option." On the plea that he is temperate the master's option is total abstinence for his crew. Whatever may be the result of local option in cities, for instance in Maine, the total abstinence option in those small communities floating around under the English flag has only caused the British tars to indulge to excess at the first and every following opportunity, and India has the pleasure of seeing more of her multitudinous sons honorably employed. Under any other flag that uses upon the sea (this is inadvertently quoting Kipling again) the sailors are given their daily rations of liquor—wine and cognac for the French, gin for the Dutch, kummel for the Germans, a certain cherry brandy for the Scandinavians, etc. A certain amount of this liquor each sailor can claim, and the captain may give an extra allowance as he thinks fit, as, for instance, after reefing a topsail.

Should some readers consider the above simply the vulgar prejudice of national superiority, or others claim that comparisions are odious, the more temperate and decent behavior ashore of sailors who have been regularly, though sparingly, supplied than those from whom liquor has been arbitrarily withheld during a voyage is conclusive proof that the latter procedure does not further the desired end. This is the age of the survival of the fittest, and Chinese, Laskars and Malays have the floor, or rather, the deck.

F. H.



Great Northern steamship Minnesota just after the launch at New London, Conn.

MARCONI SYSTEM FOR AMERICAN LINE.

The American Line, which has for some time past had the Marconi wireless telegraph system in successful operation on the steamer Philadelphia, has issued a handsomely illustrated circular showing cuts of the Marconi station and of the St. Louis at sea, and announcing its determination to equip the St. Louis, the St. Paul and the New York at once with the system. In addition to the facilities offered to passengers in the way of sending or receiving telegrams while at sea, arrangements have been made with news companies for supplying current news, which will be sent by wireless telegraphy to east-bound steamers from the Polah station on the coast of England and to west-bound steamers from the Siasconset station, Nantucket. The steamers of the line when fitted with the wireless telegraph apparatus will be practically in continuous communication with either shore stations or with passing steamers.

Rear Admiral Melville, chief of the bureau of steam engineering, has under conside.ation a report from the chief engineer of the Maine regarding the condition of the ship's boilers. Ninety tubes are said to be bent and several bursted. The Maine will be sent to Cramps for repairs but it is not yet determined whether the builders or the government will stand the cost of repairs.

NEWS OF THE GREAT LAKES

LAKE FREIGHT MATTERS—SEASON CONTRACTS.

Representatives of the Steel Corporation announced, a few days ago, that they were ready to take up with vessel men the question of season contracts for the movement of iron ore. They offered 85 cents from the head of Lake Superior, 75 cents from Marquette and 65 cents from Escanaba. They found no difficulty in covering their present requirements at these figures, although it was expected that on an 85-cent basis from the head of the lakes the Marquette rate would be 80 cents and the Escanaba rate 70 cents. But as the Steel Corporation insisted upon a greater differential, the same that was objected to last year, other shippers followed suit, and those among them who can not offer ore from the head of the lakes as well as from Marquette and Escanaba are of course placed somewhat at a disadvantage in their dealings with the vessel men. The fact that the Escanaba rate is considered low in comparison with the head-of-the-lakes rate will also retard the movement of coal to Lake Michigan ports unless the freight situation should go against the vessels. However, all the season ore that has been offered thus far at the rates above named has been taken, and provision has probably been made in all for 20,000,000 tons, including what the Steel Corporation vessels will carry and what will be carried by vessels of other ore concerns. Ore sales are slow and there are three or four large shippers who have as yet done practically nothing in lake freights. Various conclusions have combined to delay the starting of vessels and it is a little to the advantage of the ships that the first of May will see a very small general movement of freight compared with quite a large volume of business showing up on May 1 a year ago.

No season contracts for soft coal are announced as yet but there has been a large amount of chartering for single trips at 40 cents to the head of Lake Superior from Ohio ports, 50 cents to Milwaukee and Chicago, and 45 cents to Manitowoc, Sheboygan and Escanaba.

CANADIAN CANALS NOW FREE.

The budget speech on Thursday last of Hon. J. W. Fielding, minister of finance for Canada, contained a surprise for the shipping men of Canada. The minister announced that the government had decided to remit for the next two years the dues collected on vessels using the Canadian canals. The canal at Sault Ste. Marie is already free, and the amount collected on the other canals is only one-fifth of one per cent on the capital invested. The vessel owners claim, however, that this charge has considerably handicapped the development of the Canadian mercantile marine and aids in keeping cargoes from seeking an outlet through Canadian channels. A resolution giving effect to this policy has been submitted to the house of commons.

Another resolution is also before the house of commons as the result of the budget speech, namely, one to abolish the tax levied by the tariff resolutions on foreign-built vessels, other than British, desiring to obtain a Canadian register. In 1897 duties were imposed upon the value of the hull of 25 per cent. and 10 per cent. upon the machinery of foreign-built vessels desiring to be registered in Canada, and to engage in the Canadian coasting trade, but the case of the Minnie M., brought from the United States by the Algoma Central Steamship Co., raised a doubt as to whether these duties could be enforced, and in 1902 a special act imposing a license duty equal to 25 per cent. upon the value of the hull, rigging, machinery, boilers, furniture, etc., of such vessels. This act became operative in September last and applies to all foreign-built vessels, even though they held British registration papers.

NOTES FROM DULUTH.

Duluth, Minn., April 22.—In April of last year iron ore shipments from Minnesota aggregated 985,000 gross tons. This can not of course be equaled this month, as the start is much later than it was in 1902, but the preparations for a big movement are such that everybody expects to see this year's loss on the start of a few days soon made up.

The Cleveland-Cliffs Iron Co. has about 800,000 tons of good ore in section 10, T 56, R 23, the best far westerly ore yet found on the Mesabi range. It lies in the southeastern part of the southwest quarter of the northwest quarter, three miles east of the Arcturus and six east of the Diamond. The first cast at the Pioneer furnace of the Cleveland-Cliffs Iron Co. at Marquette took place Thursday morning, eighteen hours after the fires were started. The furnace is now running steadily. It has not yet reached full production, but is intended to make better than 150 tons of charcoal iron daily and may do quite a bit more than that.

The Zenith Furnace Co., in addition to its new Cass mine, southeast of the Biwabik, has a small body of ore a short distance southwest of the Biwabik and is sinking a shaft there. The tonnage is not more than 500,000 tons, perhaps not as much, but it is excellent ore and will be excellent for furnace mixture. The company's Cass is now shipping to the furnace. This company has just closed a contract with the city of Duluth, under which it is to put in a large Otto by-product coke plant and to sell the gas to the city for its lighting department so that gas can be retailed at from 90 cents per 1,000 ft. downward. The company will build the plant this summer and will later extend its metallurgical operations.

The Great Northern Railway is to make of Kelley Lake, a few miles southwest from Hibbing, a large transfer and terminal yard, to which ore will be brought from many west Mesabi mines and made up for the haul to Lake Superior. Six miles of yards will be put in, with roundhouses, shops and coaling stations. The company is building west from the Nushwauk branch toward a connection with its main line at Grand Rapids and will soon be able to get in or out either way, direct to Duluth over the old Duluth & Winnipeg or via the Mesabi range and Virginia. The road built north to Virginia from Stoney Brook last year is to be double-tracked this season.

MASTERS AND ENGINEERS OF LAKE VESSELS.

Kelley Island Lime & Transport Co., Cleveland: Steamers—Desmond, Capt. A. Dixon, Engineer A. Ferguson; A. S. Chisholm, Jr., Capt. D. Henderson, Engineer W. H. Kennedy; Isabella J. Boyce, Capt. G. E. Benham, Engineer John Stolder; Albert Y. Gowen, Capt. C. Smith, Engineer C. C. Smith; Norma, Capt. Wm. P. Wheeler, Engineer John D. Magnussen. Schooners—Fannie Neil, Capt. W. A. Fetterly; David Moran, Capt. J. M. Robinson; Ohio, Chas. P. Donahue.

Brittain, R. C., Saugatuck, Mich.: Steamers—J. S. Crouse, Capt. Alex Schriver, Engineer S. J. Johns; O. E. Parks, Capt. O. E. Parks, Engineer Robt. Elliott; Frank Woods, Capt. C. B. Coates, Engineer H. Randall; Saugatuck, Capt. John Campbell, Engineer A. Dunning; Chas. McVea, Capt. W. Tumbull, Engineer H. Bender.

Mills, N. & B., Marysville, Mich.: Steamers—Havana, Capt. Wm. Henderson, Engineer C. B. Keeler; Sparta, Capt. A. Johnson, Engineer ————; Argonaut, Capt. Geo. J. Bennett, Engineer E. R. Kelley; N. Mills, Capt. Dan Warwick, Engineer E. J. Moore; Harley, Capt. Thomas Rhadigan, Engineer ————; City of Concord, Capt. Joseph R. Inches, Engineer ————; Schooners—Biwabik, Capt. Chas. Ludwick; Alex. Anderson, Capt. John Edwards.

Gilchrist & Co., C. P., Cleveland: Steamers—E. S. Pease, Capt. John Little, Engineer Geo. Reid; H. B. Tuttle, Capt. L. E. King, Engineer John Lee. Schooner—Planet, Capt. Wm. Kelley.

Blodgett, O. W., Bay City, Mich.: Steamers—C. H. Bradley, Capt. James Bennett, Engineer R. C. Speir; Zillah, Capt. M. Canartney, Engineer James Spiers; Myron, Capt. Geo. H. Phelps, Engineer N. P. Slater. Schooners—Mary Woolson, Capt. Wallace Allen; Brightie, Capt. L. D. Bennett; Delaware, Capt. Wm. R. Young; B. W. Jenness, Capt. E. S. Keenan; Ogarita, Capt. W. Keenan; Nellie Redington, Capt. John Gordon; Goshawk, Capt. James Gordon; Sandusky, Capt. Geo. R. Phelps.

Corrigan, James, Cleveland: Steamers: Australia, Capt. J. W. Brion, Engineer Duncan Frazer; Bulgaria, Capt. Ed. Rains, Engineer B. Henry; Caledonia, Capt. Robt. Donaldson, Engineer A. Simpson; Italia, Capt. John McArthur, Engineer Jno. Maxwell; J. Emory Owen, Capt. N. L. Miner, Engineer John Radford; Iron Age, Capt. U. S. Cody, Engineer Mike Callan; Iron Chief, Capt. F. B. Chilson, Engineer ————; Iron Duke, Capt. J. W. Nicholson, Engineer Jas. Kimberley; Minnesota, Capt. Harvey Peters, Engineer Fred Craig; Progress, Capt. F. D. Perew, Engineer H. Haynes. Schooners—Amazon, Capt. Robt. DeLong; Polynesia, Capt. A. D. McKay; Ashland, Capt. Arthur Adams; Tasmania, Capt. James O'Flynn; J. M. Hutchinson, Capt. John McArthur; J. I. Case, Capt. Wm. Radford; M. W. Page, Capt. Henry Morey; Iron Cliff, Martin Kurth; F. D. Ewen, Capt. M. D. Pidgeon.

Corrigan, John, Cleveland: Steamer—Aurania, Capt. F. B. Cody, Engineer Wm. Bannerman.

AROUND THE GREAT LAKES.

Capt. John Wooley of Ashtabula has been appointed local manager for the Great Lakes Towing Co. at Erie.

Capt. Wm. Shaw has sold the Chicago schooner Sophia J. Luff to Geo. Plunkett and she will be taken to Cobourg, Ont, and registered as a Canadian.

The steamer D. F. Rose, which went on the rocks off Put-in-Bay late last fall when her two barges were lost, was taken to Detroit a few days ago for repairs.

Wrecking Master H. W. Baker of Detroit has given up all idea of floating the steamer C. B. Lockwood, which foundered in Lake Erie. He says her decks are all gone.

Night service between Cleveland and Buffalo with the two big side-wheel steamers City of Erie and City of Buffalo was begun Monday by the Cleveland & Buffalo Transit Co.

Capt. Miles Barry says that the steamers Badger State and Empire State will go on the Detroit-Cleveland run on May 1. It will be impossible to get the docks at Detroit ready prior to that time.

President Goodrich of the Goodrich Transportation Co., operating on Lake Michigan, is figuring on the construction of a large side-wheel passenger steamer. He has been consulting Mr. Frank E. Kirby of Detroit regarding designs.

Capt. H. W. Baker of Detroit has sold the barge Monitor, through G. W. Parker of Marine City, to Vicker & Wheeler of Port Arthur. A full pump equipment went with the boat, which will be rebuilt and turned into a sandsucker.

United States Marshal Conkling at Buffalo Thursday sold at public auction the schooner William Jones, which has been lying in the harbor unused, to Hiram Exstein, for $530. The Jones was seized under execution held by Hand & Johnson.

Sinaloa is the name of the Tomlinson steamer launched at the West Bay City yard of the American Ship Building Co. last Saturday. She is 436 ft. over all, 416 ft. keel, 50 ft. beam and 28 ft. deep, equipped with triple-expansion engines with cylinders of 20, 33½, and 55 in. diameter and 40 in. stroke, supplied with steam from two Scotch boilers of 13½ ft. diameter by 11 ft. 6 in. length.

Last Thursday the steamer Saranac of the Lehigh Valley Line struck a sunken obstruction off Wind point near Racine and was badly damaged. The wonder is that she did not break in two and sink. A survey of her hull shows that twenty of her frames and stanchions were broken, three deck beams shattered and bolts and rivets started in all parts of the ship. For 70 ft. along her deck the heavy steel plates are bent and twisted.

Edward Kelley, general freight and passenger agent of the Lake Michigan & Lake Superior Transportation Co., Chicago, announces appointment of the following officials of the company at Lake Michigan and Lake Superior points: John C. Fitzpatrick, general agent, Duluth; Herbert J. Seaton, general agent, Hancock; James J. Hogan, general agent, Milwaukee; John T. Horton, freight contracting agent, Chicago; Harvey F. Dunnigan, freight contracting agent, Chicago; Louis P. Wingert, passenger agent, Chicago.

Mrs. Anna C. Minch, who is over eighty-three years of age, christened the steamer named for her as it was launched at the Cleveland yard of the American Ship Building Co. last Saturday afternoon. The steamer is building for the Kinsman Transit Co. of Cleveland and is of the following dimensions: Length 400 ft. over all, 380 ft. keel, 50 ft. beam and 28 ft. deep. Her engines are triple-expansion with cylinders of 22, 35 and 58 in. diameter and stroke of 40 in. Steam will be supplied by three Scotch boilers, 12 ft. in diameter and 12 ft. long. Capt. Harry Gunderson will sail her.

One of the finest charts as yet issued by the United States Lake Survey (engineer department of the government) covers Lake Huron and Georgian bay completely, extending up into the Sault river about as far as Detroit and past the Straits to Waugoshance, the Lake Huron part including also Saginaw bay. The chart is in colors and of course quite large on account of the great expanse of water which it covers. It is certainly a credit to Lake Survey. Edges of this chart have been taped by the Marine Review and it will be mailed in a package well secured to any address at 75 cents.

A Detroit dispatch announces that the lake seamen's union decided by unanimous vote not to ask for a change in their contract with vessel owners as suggested by the settlement of the firemen's strike, preferring to let the agreement stand at $45 per month and 25 cents per hour for work done when off watch. After reaching an agreement with the firemen, the Lake Carriers gave the seamen the option of a contract at $47.50 per month and no overtime or $45 with overtime. The sailors decided to stick to their original contracts and National Secretary Penje has so notified the Lake Carriers' committee.

Capt. F. B. Hackett, who has for years conducted a towing and wrecking business at Amherstburg, Ont., keeps on making additions to his equipment and announces that he will be in better shape than ever this year to care for vessels that may meet with accident in the vicinity of the mouth of the Detroit river. He has the tugs Florence, Home Rule and M. F. Parsons, and the 700-ton lighter L. S. Hammond with four booms. He is constantly in communication with the lighthouse at Pelee island, with the keeper's residence at Point au Pelee and with Hackett's dock at Colchester. Messages may be sent to owners of vessels from any of these points.

Satisfactory progress is being made with the several vessels under construction at the Detroit works of the American Ship Building Co. but there is still new work enough ahead to keep the yard at Wyandotte employed until late in the fall. One of the three Wolvin canal-size steamers building at this yard will get away about Tuesday next. The second will be launched late next month and the third in the latter part of June. The big steel freight steamer building for the Provident Steamship Co., also managed by Mr. Wolvin, will be launched May 23. After these vessels are out of the way the Detroit works will still be employed on a large freighter for M. J. Cummings of Oswego and on the car ferry that is to run between Port Huron and Sarnia.

Vessel captains on Lake Michigan express some uneasiness over the obstruction which last week so nearly caused the sinking of the Lehigh Valley Line steamer Saranac north of Racine. Commanders of steamers in the Chicago trade are seeking anxiously for light on the mystery of the big liner's accident, that they may, if possible, avoid similar trouble. Capt. Charles A. Potter of the Saranac says the vessel struck 3 miles north-northeast of Wind Point light. Charts of the lake show 70 ft. of water there. The Saranac was drawing 17 ft. The nature of her injuries indicate the obstruction as of small area. A survey by the government, which may be made, would show whether the Saranac, drawing thus close to destruction, has uncovered the mystery of the fate of the L. R. Doty five years ago.

Indiana harbor is the only important lake harbor in the state of Indiana. The federal government has paid some attention to it and a movement has been started to influence congress to improve it further by the construction of a sea wall. Nearly $5,000,000 is invested in manufacturing enterprises at Indiana harbor, employing a force of 5,000 workmen. Lately there has been formed a company, known as the East Chicago Co., which has for its object the improvement of East Chicago and Indiana harbor. Many private improvements at Indiana harbor are contemplated, including the construction of a canal 1 1/3 miles long and 200 ft. wide, terminating in a turning basin 600 ft. wide. Bascule bridges, requiring 30 seconds to open and close, are to be supplied by the railroad companies as their contribution to the construction of the canal. The railways are now purchasing land for terminals.

It was proposed, a short time ago, that the name of the steel steamer William S. Mack should be changed to Capt. Mack and that a similar freighter to come out this season for the same owners should be named W. H. Mack. The idea was to honor the memory of both Capt. W. S. Mack and his son, W. H. Mack, and at the same time make the names distinctive enough to avoid, confusion of the steamers. The change could not be made, however, and the steamer that was in commission last year will still be known as the W. S. Mack, while the one coming out shortly will be named Wm. Henry Mack. The government is a jealous guardian of the rights of those who have money tied up in ships. The name of a vessel against which any indebtedness exists cannot be changed. Of course the indebtedness against the Mack is the ordinary bonded indebtedness. She was built partly upon bonds as are the majority of lake vessels nowadays. The bonds are doubtless underwritten by a trust company and the whereabouts of everyone of them known. But the government makes no distinction. As long as there is a lien on the vessel its identity must remain unchanged.

Concerning difficulties with firemen during the late strike, Mr. C. L. Hutchinson, vessel owner of Cleveland, made the following statement in Buffalo the other day: "One of our steamers, the J. T. Hutchinson, got in here on Sunday. I went out on a tug to meet her. When we came in the striking firemen insisted on trying to board her to take our men ashore but we refused to allow them on board the vessel. Both the captain and myself had to take a pretty firm stand to prevent trouble, but I guess the firemen concluded we meant business. As soon as possible we communicated with Capt. Taylor of the police force and he gave us every assistance in his power and escorted our men to the station from which they were sent back home. At all times of the night police protection was furnished to us in Buffalo when we asked for it, and we have nothing but praise for the Buffalo police. They did not go beyond requirements of the law—simply gave us the kind of protection to which we were entitled. That is more than can be said of Chicago and Cleveland although the Chicago police did quite well in the matter of furnishing protection after some of the non-union men were battered up. At Buffalo, however, the protection was such that we sent out every one of our own vessels, some six or eight of them, as well as several vessels for which Hutchinson & Co. are agents and which were ready to move. Of course we were called upon to do the work ourselves and shipped mostly colored firemen, bringing them into Buffalo from Cleveland and other places. Some we held in Dunkirk until the vessels were ready to go. Other owners could have done likewise if they had tried it. The men were to be had and all they wanted was such protection as was afforded to them in getting aboard vessels in Buffalo."

BUFFALO HARBOR ITEMS.

Buffalo, April 21.—Lake people are taking a long breath since the straight week's session with the striking firemen, but are wondering where the trouble will break out next. President Livingstone of the Lake Carriers' Association spent the week here and appears to have a fair opinion of Buffalo as a fighting center, not to mention a few things more to her credit. There is difference of opinion as to the wisdom of negotiating with the firemen, especially as it was a pretty sure victory over them without. The increase of pay in place of the overtime demanded is everywhere commended. Nobody wanted to risk the endless disputes sure to come up in this quarter over the reckoning of this extra time.

This is a ship building center again, perhaps more than ever before. The old Union yard has two steel steamers going up at once and the Empire (Gilchrist) yard has a good lot of smaller work, both old and new, in progress. There is a new sort of complaint made against the unions now from the ship yards. The force is not as large as the owners would like to put on and yet they are not able to make any material increase, for they say there is no use of hiring men from outside, as they are sure to be "chased out" by the resident workmen, who appear to look on the jobs as their property and are willing to see it last as long as it will.

A queer state of things exist in regard to the grain shoveling. At the annual meeting of the Lake Carriers' Association it was agreed to raise the wages of the scoopers from $2.10 per 1,000 bushels to $2.22½, somebody making the innocent remark, as reported, that likely the elevators would consent to come down a little in order to make it even. Well, of course the elevators would do nothing of the sort. Everybody in that interest is indignant over what is considered an imposition. Even Capt. James Davidson, who owns Buffalo elevator property, but says he is much more of a vessel owner, declines with his usual decisiveness to consider any proposition to come down from last season's shoveling charges of $1.20 per 1,000, adding that "the price of coal is up and rope is much higher than it was."

So the Lake Carriers' Association gives it up. The elevators are not likely to strike, as the workingmen did, and the word is: "Let the individual vessels make their own terms with the elevators. We will step out." As a result of this the elevators are charging last year's rate and grumbling because the scooper obtained what they should have had at least a part of. There is not much prospect of any real dispute over it.

The season elevator pool is dragging along about as usual. It expires April 1, but at that time this year the management of the Great Northern elevator had not been arranged, so there was a good excuse for delay. The appointment of the pool, therefore, hangs fire, though it seems to be expected that about the former arrangement will be made. The fact is that the "Buffalo charges," once made such a handle of by the rivals of this port, have virtually disappeared, outside of what goes for shoveling and is paid by the vessel. All rail grain pays its elevation as freight and it has been the practice of late to elevate canal grain free, though the charge may be put on this season. One thing against this is the fact that it would give the idle canal elevators a life again and this is not considered good policy by the pool. Till the question is settled no canal freights can be fixed, though some cargoes have been taken. [Since the foregoing was written, the reorganization of the Western Elevating Association, otherwise known as the elevator pool, has been effected harmoniously for another year. The same rates, rules and conditions as prevailed last year have been adopted for this season. The officers are: President, George E. Sowerby; vice-president, Henry Waters; secretary, P. H. Cook. Charles T. Heald and George E. Cochran were added to the executive committee.]

It seems to be accepted here that the canal enlargement bill will be ratified by the voters of the state this fall, but there will be no letting up of the campaign that has been carried on with the Buffalo Merchants' Exchange to set the plan and the pace, for the size and the majority in favor will have great significance. A big one means "hands off" to any future legislature that has the disposition to tinker with the measure. The move to syndicate the canal fleet appears to be off.

The controlling owners of the steamer America appeared to have scored a point in the suit brought by Maytham and others to dissolve the partnership. The court has appointed Chas. Beyschlag, the present managing owner, receiver of the interest and made Attorney George Clinton referee to determine whether there is cause for a division and sale. The steamer has been allowed to go into commission, and Capt. Henry Leisk, who bought an interest in her when the present control was obtained, will continue to sail her.

JOHN CHAMBERLIN.

CANADIAN SHIPPING NOTES.

Sir W. Laurier, premier of Canada, has expressed an opinion favorable to the improvement of the French river, with a view of ultimately making it a link in a new system of inland navigation from Lake Huron to the St. Lawrence, via the Ottawa river. The expenditure of $5,000,000 on the French river project would give a 21-ft. navigation to North Bay, Ont., with which point the Canadian Pacific Ry. and the Grand Trunk Ry. already have connection, and to which point the Canadian Atlantic Ry. is seeking power to construct a line from Whitney. The special reports on the French river project made last year were ordered to be laid before parliament.

The Canadian Lake & Ocean Navigation Co. will have on the great lakes by the end of May two of the three steamers building in Great Britain. They will be the J. H. Plummer, built by the Northumberland Ship Building Co., Newcastle-on-Tyne. The third steamer, not yet named, is being built on the Clyde. They have all the same dimensions—Length, 245 ft., beam 37 ft., depth 24 ft.—and have all the facilities which experience has shown to be necessary for the rapid handling of general and grain cargoes on the great lakes.

The Huron Navigation Co. has been incorporated under the Ontario companies' act, with a capital of $40,000, to carry on a general navigation business in Ontario. Head offices are to be in Toronto. The provisional directors are W. J. Brown, Detroit, Mich.; T. Mulvey and W. H. Hodges, Toronto. The company has acquired the side-wheel steamer Pittsburg, recently sold at Owen Sound, and will operate her on a route between Owen Sound and Sault Ste. Marie.

Officers of the recently formed Dominion Marine Association are: President, C. F. Gildersleve, Montreal; vice-presidents, J. J. Long of Collingwood and G. W. Rathbun of Desoronto; secretary-treasurer, F. King, Kingston; executive committee, Capt. Crangle, Capt. T. Donnelly and Capt. Gaskin of Kingston, R. O. MacKay of Hamilton, R. E. Carter of Desoronto, and T. Hartney and J. A. Cuttle of Montreal.

Capt. J. Ewart has been given command of the Iroquois, the latest addition to the fleet of the St. Lawrence & Chicago Navigation Co., which has just left the builder's yard in Toronto. E. O'Dell is chief engineer.

The Canadian Pacific Ry. has purchased from the Elder-Dempster Co. the steamer Monmouth, thus making fifteen steamers which the company has engaged in the transatlantic trade.

A. St. G. Hammersley of North Vancouver, B. C., proposes to build a new ferry steamer, and to erect wharves at a cost of $45,000, in order to give an improved service.

Capt O. J. Humphrey has been appointed general manager of the North American Transportation & Trading Co., with headquarters at St. Michael, Alaska.

D. O'Connor, Sudbury, Ont., is having a small steamer built on Lake Temagaini, Ont., at the point where the new railway from North Bay will touch.

Capt. T. A. Hawkett, formerly of the Leyland Line, has been appointed marine superintendent of the International Mercantile Marine Co. at Quebec.

A storm signal station is about to be erected at Sydney, Nova Scotia, by the Dominion government, the Sydney town council providing the site.

Capt. A. D. Reford of R. Reford & Co., Ltd., steamship agents, Montreal, has been elected a member of the Montreal board of trade.

Steamship service from Quebec in connection with the Great Northern Ry. will be carried on by ten steamers of 7,500 to 8,000 tons each.

The Dominion government is installing a tune signal at the government building, Halifax, N. S., for the benefit of shipping men.

E. A. Cook of Montreal has been appointed freight manager of the Canadian Pacific Ry. Co.'s transatlantic line.

The St. Lawrence & Chicago Steamship Co. has increased its capital from $500,000 to $1,000,000.

Capt. A. Miller of the steamer New York died at Kingston, Ont., on Tuesday last.

All differences between capital and labor on the great lakes have been settled for the season, and on the whole the victory is with labor. Indeed it would be uncivil irony to say that capital got the best of it. In some instances the settlements have been ignoble. The settlement with the firemen is little less than capitulation. They had no cause for striking; they had no warrant for the schedule of wages which they presented; and they should have been whipped, whipped if for nothing more than their assaults upon the few men who went to work. They would have been whipped too, had the owners held out, for the firemen stood alone and their claims were not supported by the other unions. In fact they were regarded as unjust by the others. What is agreed upon is a better wage than the firemen have ever received, better than they get anywhere else on earth. The lesson to be drawn from the fencing of the past few weeks is that it pays to belong to a labor union. Non-union labor is the under dog. It is not even defended by those whom it defends. Capital frequently claims to have just grevi-ances against the unions and yet it is doing more to strengthen the sinews of the unions than all the unions put together. What inducement is there for a man to treat with a company as an individual and to enter into contract with it if it will desert him when he most needs its help.

Mr. Andrew Haas, chief engineer of the Great Lakes & St. Lawrence Transportation Co., gives the names of engineers of the ten steamers coming out for that company as follows: Henry Johnson, Bion St. Bernard, Jos. Jamison, John Johnston, Morris Gore, L. D. Weeks, Jas. Chestnut, Wm. L. Brown, H. M. Burton and Lester L. Hineline.

SUMMARY OF NAVAL CONSTRUCTION.

The monthly summary issued by the bureau of construction and repairs of vessels under construction for the United States navy shows fair progress on all vessels of the larger class. The New York navy yard is making headway with the Connecticut, having gained 3 per cent. during the month. The Newport News company with the Louisiana did no better than this, though it is further advanced, having had an earlier start. The armored cruiser West Virginia is 48 per cent. completed and is to be launched during the present week by the Newport News company. The torpedo boats are practically in the same condition that they have been for months. Following is the summary:

Name.	Building at	Degree of completion. Per Cent. Mar. 1.	Apr. 1.
	Battleships.		
Missouri.....	Newport News Co.	87	90
Ohio.....	Union Iron Works	70	71
Virginia.....	Newport News Co.	21	26
Nebraska.....	Moran Bros. Co.	16	17
Georgia.....	Bath Iron Works	21	22
New Jersey.....	Fore River Ship & Engine Co.	29	32
Rhode Island....	Fore River Ship & Engine Co.	28	31
Connecticut.....	Navy Yard, New York	1	4
Louisiana.....	Newport News Co.	3	6
	Armored Cruisers.		
Pennsylvania....	Cramp & Sons	45	47
West Virginia...	Newport News Co.	45	48
California.....	Union Iron Works	22	24
Colorado.....	Cramp & Sons	48	50
Maryland.....	Newport News Co.	44	45
South Dakota...	Union Iron Works	24	24
Tennessee.....	Cramp & Son	0	0
Washington.....	New York Ship Building Co.	0	0
	Protected Cruisers.		
Denver.....	Neafie & Levy	86	88
Des Moines.....	Fore River Ship & Engine Co.	80	82
Chattanooga.....	Lewis Nixon	68	71
Galveston.....	Wm. R. Trigg Co.	66	66
Tacoma.....	Union Iron Works	66	69
Cleveland.....	Bath Iron Works	92	94
St. Louis.....	Neafie & Levy	14	16
Milwaukee.....	Union Iron Works	12	14
Charleston.....	Newport News Co.	31	33
	Monitors.		
Florida.....	Lewis Nixon	98	99
	Torpedo Boat Destroyers.		
Hopkins.....	Harlan & Hollingsworth Co.	96	96
McDonough.....	Fore River Ship & Engine Co.	98	98
	Torpedo Boats.		
Stringham.....	Harlan & Hollingsworth Co.	98	98
Goldsborough...	Wolff & Zwicker	99	99
Blakely.....	Geo. Lawley & Son	99	99
Nicholson.....	Lewis Nixon	98	98
O'Brien.....	Lewis Nixon	98	98
Tingey.....	Columbian Iron Works	94	95
	Submarine Torpedo Boats.		
Plunger.....	Lewis Nixon	99	99
Grampus.....	Union Iron Works	92	94
Pike.....	Union Iron Works	89	93
Porpoise.....	Lewis Nixon	99	99
Shark.....	Lewis Nixon	99	99
	Steel Tugs.		
Pentucket.....	Navy Yard, Boston	33	60
Steel Tug.....	Navy Yard, Mare Island	0	4

PRODUCTION OF OPEN-HEARTH STEEL.

The American Iron & Steel Association has secured from the manufacturers complete statistics of the production of open-hearth steel in the United States in 1902. The total production of open-hearth steel ingots and castings in the United States in 1902 was 5,687,729 gross tons, against 4,656,309 tons in 1901, an increase of 1,031,420 tons, or over 22 per cent. As compared with 1898 five years ago, when the production of open-hearth steel amounted to 2,230,292 tons, there was an increase in 1902 of 3,457,437 tons, or over 155 per cent. The following table gives the production of open-hearth steel ingots and castings, by states since 1899:

States.	1899. Gr. tons.	1900. Gr. tons.	1901. Gr. tons.	1902. Gr. tons.
New England	57,124	74,522	170,876	179,923
N. York & N. Jersey ..	61,461	67,361	82,985	92,763
Pennsylvania	2,393,811	2,699,502	3,594,763	4,375,364
Ohio	117,458	130,191	184,943	278,854
Illinois	246,183	285,551	398,522	435,461
Other states	71,279	141,008	224,220	325,364
Total	2,947,316	3,398,135	4,656,309	5,687,729

The open-hearth steel made in 1902 was produced by ninety-eight works in sixteen states—Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Delaware, Maryland, Tennessee, Alabama, Ohio, Indiana, Illinois, Michigan, Wisconsin and Missouri. Ninety works in fourteen states made open-hearth steel in 1901. The states which have open-hearth furnaces, but which did not produce steel by this process in 1902, were Kentucky and Minnesota. The erection of a large open-hearth steel plant was begun in Colorado in 1902, but open-hearth steel had not been made down to the close of the year. This state will, however, probably make open-hearth steel during the year 1903. Maryland and Michigan again made open-hearth steel in 1902.

In 1901 3,618,993 tons of open-hearth steel were made by the basic process and 1,037,316 tons were made by the acid process, while in 1902 the production by the basic process amounted to 4,496,533 tons and by the acid process to 1,191,196 tons. In the following table the production by states of both acid and basic steel in 1902 is given.

States—Gross tons.	Basic open-hearth steel.	Acid open-hearth steel.	Total. Gr. tons.
New England	110,961	68,962	179,923
N. York & N. Jersey	54,296	38,467	92,763
Pennsylvania	3,459,702	915,662	4,375,364
Ohio	195,700	83,154	278,854
Illinois	384,951	50,510	435,461
Other states	290	34,441	325,364
Total	4,496,533	1,191,196	5,687,729

The increase in the production of acid steel in 1902 as compared with 1901 was 153,880 tons, or almost 15 per cent., while the increase in the production of basic steel was 877,540 tons, or over 24 per cent.

The total production of open-hearth steel castings in 1902, included above, amounted to 367,879 gross tons, of which 112,404 tons were made by the basic process and 255,475 tons were made by the acid process. In 1901 the production of open-hearth steel castings amounted to 301,622 tons, of which 94,941 tons were made by the basic process and 206,681 tons by the acid process. The following table gives the production of open-hearth steel castings by the acid and basic processes in 1902, by states, in gross tons:

States—Gross tons.	Acid castings.	Basic castings.	Total. Gr. tons.
New Eng., N. Y. and N. J.....	33,158	3,883	37,041
Pennsylvania	141,385	11,014	152,399
Ohio, Illinois and other states ..	80,932	97,507	178,439
Total	255,475	112,404	367,879

HAMMERING THE 1,000-BARGE PROPOSITION.

The New York Sun is publishing a column a day against the 1,000-ton barge proposition which is to be submitted to the people of New York state this fall. It says pooh-pooh, and likewise fudge, to the argument that trade is being diverted to southern ports which geographically belongs to New York. It says the real reason that Baltimore is getting the grain trade is that it has elevators and New York has not. It asks the farmers of New York if they are going to spend $100,000,000 merely to see the grain of western states pass through New York without adding a single penny to their income. Already it is clear that an effort is to be made to line up the farmers against the proposition. Certain agricultural newspapers are also coming into the chorus and insisting that as the canal is a national highway it should be constructed by the nation and not by one state. The opposition of the railways is at present veiled, though it is expected to become active. The railways really have nothing to fear from the canal. Their trade will not be diminished. The railways have not diminished the number of vehicles on the pike road; nor will the number of vessels on the canal diminish the traffic of the railways. It will simply bring into being trade which does not now exist. Have the 2,000 or more vessels on the great lakes lessened the railway traffic of the lake region? They have literally expanded it by creating a trade which the railways could never handle but which has a multiplicity of subsidiary trades which are the very life of the railways. A new avenue of transportation, if practical and adequate, cannot do anything else than expand and develop commerce, and yet to read the arguments against the canal one would think that it would annihilate commerce.

The proposition which is to be submitted to the people of New York this fall is the only practical method of connecting the lakes with the ocean by an all-American waterway.

Marquette, Bessemer & Dock Navigation Co. is the name of the new corporation, understood to be a part of the Pere Marquette railway system, that has taken over the car ferries Shenango No. 1 and Shenango No. 2, and that is to operate them in coal trade on Lake Erie, together with dock property at Conneaut, O. The transfer is from A. C. Huidekoper and the United States & Ontario Steam Navigation Co., and it would seem from the papers involved in the transaction that the new company will later put on a third ferry to be operated in connection with the Shenangos.

OBITUARY.

David Bell, veteran ship builder of Buffalo, passed away at his home on Monday last. He was in his eighty-sixth year, having been born at Dumfries, Scotland, on Dec. 7, 1817. He had lived in Buffalo since 1842. Mr. Bell was one of the pioneers in the iron business at Buffalo. He established an iron business there and was one of the first builders of iron boats on the lakes. One of Mr. Bell's early feats was the taking of an engine from the Erie road to his workshop one winter to be repaired. The engine was placed on small sleighs and dragged by sixteen teams of horses to his shop. It took him several months to repair the engine and after it was finished there was much speculation as to how he would get it back again. This was accomplished by loading the engine on a scow, taking it to the Erie wharf and lifting it up upon the tracks by means of an immense crane. In 1866 Mr. Bell built four engines that were monsters for those days. Each engine weighed 30 tons. Two were bought by the Lake Shore and two by the Erie. These engines would now be considered small but they were sufficiently large at that time to attract the attention of the entire technical press of the country. Mr. Bell also built a number of revenue cutters for the government. Among the merchant vessels which he built were the old steamer Idaho and the yacht Enquirer. He was more than an ordinary man. He was known as the Peter Cooper of Buffalo. He was very much interested in the progress of young men and always made it a point to follow the career of anyone who had ever been in his employ. His interest in them did not cease with their interest in his enterprise. He was very public spirited and was one of the organizers of the old Mechanics' Institute and was president of the first industrial exhibition ever held in Buffalo. Mr. Bell is survived by his widow and three children.

Death came very suddenly last week to Mr. L. S. Dickey, superintendent of the Macbeth Iron Co. of Cleveland. He was stricken down in the fulness of manhood, for he was only thirty-eight years old. Arriving home from a business trip, during which he had been exposed to the elements, he was attacked with pneumonia and died within four or five days. Mr. Dickey entered the employ of the Cleveland Ship Building Co. as timekeeper in 1887, and was gradually promoted until upon the formation of the American Ship Building Co. he was made superintendent of foundries. With his associates he was extremely popular as he was wont to go out of his way to be obliging. Noting in 1901 the great development of the iron business he assisted in the organization of the Macbeth Iron Co. and in August of that year became its superintendent. This firm has been unusually successful. Notwithstanding its youth it has built up a considerable business as engineers, founders and machinists. Mr. Dickey demonstrated that he possessed executive capacity of the highest order and his death removes a man of great promise. He is survived by a widow and three children. The funeral was held last Saturday from the family residence at No. 112 Mueller avenue and the interment was at Riverside cemetery. The pall bearers were W. H. Shepard, M. G. Tielke, J. G. Mesker, Thomas Macbeth, C. W. Kelly and C. J. Snow.

Vessel owners and those associated with great lakes traffic will generally regret the death of Martin Conners, which occurred at his home in Cleveland last week. He was one of the characters of the great lakes and was well known to thousands. He had charge of the unloading of the grain on all the boats coming to the Commercial Milling Co., the Cleveland Grain Co. and the Union Elevator Co. and was therefore constantly brought in contact with vessel men. He was born in Ireland in 1850 and came to this country in 1873, retaining undimmed, however, his fondness for his mother country. The dream of his life was realized two years ago when he returned to Ireland and spent a fair part of the year there. No man along the docks was better liked than Conners. His popularity and his native inclination carried him into politics. He was very active in the councils of the Republican party and represented it at several state conventions as delegate, and in 1896 as delegate to the presidential convention at St. Louis. He never held political office, however, Mr. Conners was fifty-three years old and is survived by seven children. His wife died about a year ago. The remains were interred at Calvary cemetery, the funeral occurring from St. Malachi's church.

Capt. A. Gilmore, the Toledo ship builder, died at his home in that city last Saturday evening. He had reached the extreme age of eighty-five years and eight months. Mr. Gilmore was born in the county of Kent, Oxford township, Ontario, Aug. 27, 1817. He worked on a farm until he was fourteen years old and then began sailing on the lakes. Later he sailed on salt water and visited nearly all the countries of the globe. In 1847 he settled in Toledo and engaged in ship building. His first schooner was the Alvin Bronson. In 1851 he built a section dock for repairing vessels in connection with his ship yard. The early schooners built by him were the Rebecca, M. L. Collins, Sebastapol and Miami Belle. In 1857 he engaged in the wrecking business. In 1873 he moved his plant to Ironville, establishing a small dry dock and ship yard and had been continuously in business there since. During the past few years he had not been personally active, leaving his sons to carry on the trade.

IMPORTANCE OF A CORRECT SHIP'S COMPASS.*

By Lieut. W. H. Faust, U. S. N., Branch Hydrographic Office, Buffalo, N. Y.

By referring to the commercial statistics of the country it will be seen that the movement on the great lakes of freightable goods in the shape of merchandise, grain, ore, and lumber, has increased enormously in recent years, with no sign in the future to warn us of a diminution. On the contrary we have every reason to believe that the annual increase will go on steadily for years to come; perhaps not with leaps and bounds as in the past but with a growth that is both normal and healthy.

To move this increased freight, vessel owners and transportation companies, with wise forethought, saw that the existing vessels of small tonnage and slow speed would soon be entirely inadequate for their needs. With this knowledge in mind their orders to the ship yards brought about a revolution in ship construction; iron and steel were substituted for wood; powerful engines for the masts and sails; the vessels themselves built to carry the greatest tonnage possible with the draught limited by the depth of water; and all with the end in view to reach the most economical rate per ton per mile where the time includes that expended at sea and at the terminals. Not only do these changes apply to freight carriers but to the passenger vessels as well, though, perhaps, not to such a marked degree.

The masters and mates to command and officer the old vessels were seamen in the first place, pilots in the second place, and executive officers in the third place. There was very little need for the navigator; nor is there now in the broad sense of the term, but in its restricted sense, as applying to the compass, there is just as much need for the navigator here on the great lakes as on the salt waters. The seaman has almost entirely disappeared; nor have we longer any general need for him. But there is the need for navigators, pilots and executive officers more than ever before. The reasons for the last two are obvious enough, but for the first there seems to be a very decided opinion that they are unnecessary in the confined waters of the lakes. From a recent study of the situation I am just as decidedly of the opinion that navigators are needed here and that in the near future transportation companies will require them. To see how this will be brought about and why, one has only to review the history of the subject in England and on the Atlantic coast of the United States for the past ten or fifteen years. The "how" will be due to necessity—to meet the requirements of the underwriters and the transportation companies in lessening the chances of disaster to their properties; the "why" is to attain that one end—increased economy. Both the underwriters and transportation companies are mutually affected and should take an equal interest in a subject which is of such importance. No one can doubt of its importance if he remembers that during the navigation season of 1902 there were something like 166 disasters and mishaps to lake vessels involving the loss of 237 lives. Either alone is appalling enough and would call for sober consideration in less strenuous times.

The question now is, how can we gain increased safety and economy in the sailing of our vessels by requiring our masters and mates to be navigators as well as pilots, limiting the term navigator to a full knowledge of the compass. The primary object of the compass is to steer a known straight course; but unless the compass itself is a perfect instrument we have no means of determining exactly just what course a ship is on. nor can we determine the ship's position accurately by "dead reckoning." A compass on shore free from all local magnetic influences will point towards the north magnetic pole; on a wooden ship with very little iron used in its construction, especially in the vicinity of the compass, the compass takes very approximately the same position as it would on shore; on an iron or steel vessel, however, or on a wooden vessel even, carrying a highly magnetic cargo, the compass becomes of little value unless the influence upon it of the large masses of iron and steel composing the ship itself or its cargo can be overcome by equal but contrary forces introduced near the compass. The error in the compass caused by these local disturbing forces is called its deviation. Deviation on any point therefore may be defined as the angle at the center of the compass included between the central line of the northern end of the freely moving needle and a line from the center of the compass directly toward the north magnetic pole; in other words, it is that angle between the compass as it points on the ship and as it would point if on shore and uninfluenced by local attraction.

The natural aim of the navigator now is to relieve his compass, as far as possible, from the influence of all iron and steel in the ship herself or in her cargo or of all together. The process of doing this is called compensating or adjusting the compass.

For the purpose of this article I will take one of our modern steel vessels as an example for such adjustment. A vessel built of such material will have varying effects upon the compass according to the direction of her head while building, the amount of steel and iron in her construction, and the proximity of the nearest of it to the compass. These influences are readily and easily reduced to subjection by a competent adjuster in two gen-

*Reprinted from 1903 edition of Ship Masters directory.

eral ways—first by swinging ship for deviations followed by a mathematical resolution of the forces, and second by a mechanical but effective tentative method called "double approximation." The first way is the one most commonly in use; perhaps because the latter is comparatively unknown in the interior. The deviations themselves may be obtained in various ways, all well known to the competent navigator, and then by a system of elimination, requiring a knowledge of simple arithmetic only, this deviation is divided into its two main components, the semicircular deviation and the quadrantal deviation.

The earth's magnetism imparts certain magnetic properties to a vessel as a whole, and these properties combined exert a force upon the needle of the compass which when not acting in the plane of the magnetic meridian will deflect it from that position which it would assume if acted upon by the earth's magnetism alone. These properties are three in number: (1) Subpermanent magnetism, (2) transient magnetism induced in vertical soft iron, and (3) transient magnetism induced in horizontal soft iron. The first, as its name indicates, is neither absolutely permanent nor is it temporary but lies between these two extremes. The earth's total magnetic force, while the ship is building, converts her into a huge magnet, after two or three years, settles down to a constant force. The second is transient, as its name implies, and is a varying force due to induction in the vertical soft iron of the ship by the earth's vertical component. The third is also transient, and is likewise a varying force due to induction in the horizontal soft iron of the ship by the earth's horizontal component. In dealing with compasses it therefore becomes necessary to consider these three forces in the ship itself and a fourth force, the earth's total force, outside of the ship. As the compass itself is constrained to move in the horizontal plane alone, we may consider the horizontal components only of the above forces. It will be seen that the direction of the needle at any time will be determined by the resultant of these four horizontal components, of which three, when not acting in the magnetic meridian, tend to deflect the needle from the magnetic north pole, while the fourth (the earth's horizontal component) tends to force it into the magnetic meridian. It will be noticed that this deflection from the magnetic meridian is what we call deviation; and its amount will be determined by the comparative strengths of these four forces. If the three deflecting forces are strong compared to the fourth or earth's horizontal component we have more or less deviation and a consequent loss in the directive force of the compass or what is called a "slow" or "sluggish" compass. By compensating we restore a "slow" compass to its original quickness as well as free it from error.

A complete study of these forces on every ship should be made by the master at his first opportunity. When he understands them and sees their effects upon a compass his respect and confidence in this valuable instrument will be vastly increased.

It would take more space than I can safely encroach upon to take up the intensely interesting subject of the separate causes producing the semicircular and quadrantal deviation. I shall assume that these are found, and from them the exact co-efficients are determined by the aid of well-known formulas and the four simple rules of arithmetic. With these co-efficients known the adjustment of the compass becomes merely a mechanical matter which may be done just as well alongside the dock as at sea. The semicircular deviation may be best corrected by using three or four small magnets mounted on a tray immediately under the center of the compass, the angle of the magnets with the fore-and-aft line of the ship being computed from the co-efficients and their distance from it found by trial and error; or if no tray is or can be mounted below the compass then this same result may be reached by trial and error in placing magnets on the deck or the compass standard, one fore-and-aft on either the starboard or port side and the other athwartship either forward or abaft the compass; the positions being determined by the algebraic signs of the co-efficients and the convenience for placing.

The quadrantal deviation is best compensated by two adjustable cast iron balls or bolts, the centers of which are in the same horizontal plane with the center of the compass. Two should always be used. One alone will decrease the quadrantal deviation in two quadrants and increase it in the other two. The quandrantal curve for the compass placed on the ship's fore-and-aft line will always be regular if no unsymmetrical masses of soft iron are near and the ship herself is symmetrical. A favorite way on the lakes of correcting the quadrantal deviation is by a box of chain—not two boxes but one. I can conceive of a ship requiring such a method, but it is not possible that a majority of the ships sailing the lakes are according to that conception. The effect of one box alone can readily be seen by any one who will take an ordinary pocket compass and a wrought iron nail in a fixed position on the compass case and experiment with them. When using the iron balls or bolts the distances from the compass are obtained by trial with the ship heading on an intercardinal point. There is another source of error due to the heeling of a ship which is always corrected by vertical magnets, but this error is of such rare occurrence on the lakes that it is not necessary to consider it here.

Before attempting to adjust a compass the lubber line should be placed exactly in the fore-and-aft line of the ship for a compass mounted in that line, or parallel to such line if the compass is to one side or the other. This is such a fruitful source of error that it must be always carefully attended to. I have yet to find after many observations, a lake vessel with her lubber line correctly placed; the error varying from ¼ of a degree to ¾ of a point. When the compass is removed from the standard and then replaced great care should be taken to get it where it belongs—that is, exactly in the fore-and-aft line and at exactly the same distances from the magnets as it was before the removal.

The second method, by double approximation, is one that can be used successfully and to great advantage by every master himself, provided, always, that he has the interest of his employers and ship at heart and is willing to study a bit just to learn the reasons why.

The method has this advantage—the compass can be corrected for all courses, by placing the ship successively upon two adjacent cardinal points, and, after several observations on these points, then on the included intercardinal point. If, for example, a vessel is bound from Buffalo to the Detroit river she should be placed on the cardinal points west and south and the intercardinal point southwest with little loss of time on the trip; or if she is bound in the opposite direction the cardinal points north and east and intercardinal point northeast could be selected. The total loss of time in either case should not be over an hour or two. There is this serious objection to the method—that nothing of importance is learned about the magnetic character of the ship. If each ship had a master who watched his compass daily and found its error every time he had the opportunity, as in crossing a range, the thorough knowledge of the ship's magnetism would not be of such great importance, but we know that such a master is practically unknown on these waters. To work this method to advantage magnet trays mounted under the center of the compass and capable of a vertical motion as well as a motion in azimuth are necessary. It is a big time-saver, however, and for that reason alone is becoming very popular. While this is true it would be useless to describe it here in detail, because so few of the ships on the lakes are provided with suitable standard compasses and binnacles or with dumb compasses even.

It should be borne in mind that a compass does not stay corrected indefinitely after it has been once corrected. The magnets, both compass and corrective, will lose their directive force, and, unless the circumstances be unusual, the loss will not be the same for each or even proportional. After a ship has been lying in her winter quarters for four or five months on one heading the magnetism of the ship may be found to be decidedly different, depending upon the direction of her head, from what it was in the fall. This change sometimes amounts to as much as 1¼ points. While this abnormal character will become normal in time it is important that it be not forgotten, for, in ignorance of it, a master will say his compass is "all off" and as a consequence his faith in it will be "off." It might be said in truth that a compass itself is never off. If it shows idiosyncrasies look for some outside influence, such as the character of your cargo and the way it is stowed; or repairs may have been made in the pilot house necessitating the removal of a magnet which was not replaced or if replaced was turned pole for pole. The plain fact is a master must be ever watchful about his compasses if he wants to have faith in them.

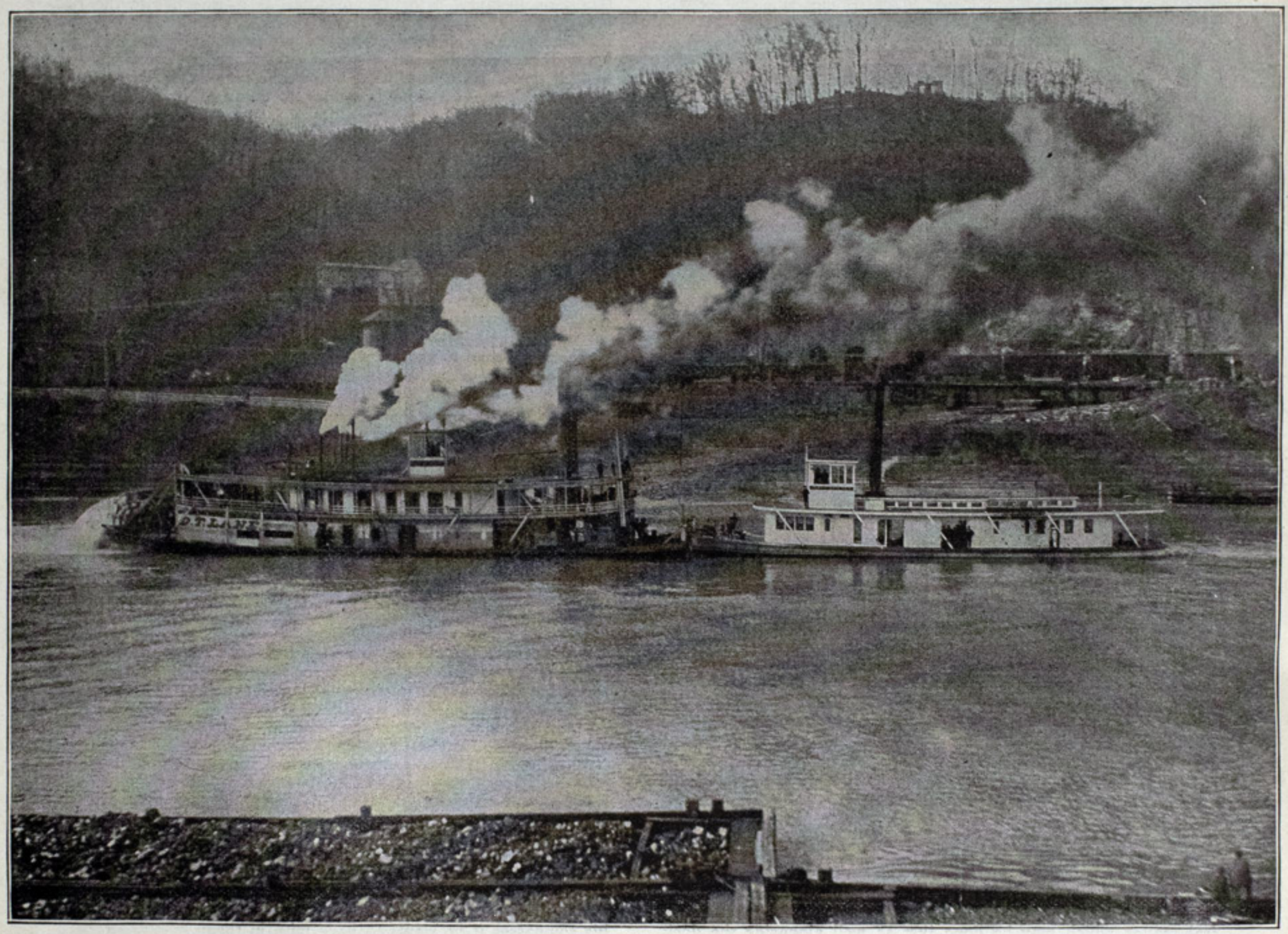
The advantages of carrying corrected compasses are so many and obvious that it seems superfluous to mention them to any seaman; but they are so often overlooked or forgotten that it will do no harm to call attention to the fact that they exist. And each one of these advantages will fall under one of the two heads mentioned above—safety or economy—the one an asset for both the insurer of the ship and its cargo, and the owners, and the other an asset for the owners alone.

From this analysis it would seem that the owners, having more at stake, would take the initiative in correcting a matter of such importance. But history teaches us that the underwriters are the ones to start the movement, and they do this by offering better rates to owners who have careful and competent masters and mates on their vessels. Many underwriters deem a ship's officers entirely out of their province, but many more have their black lists (probably not on the lakes but certainly in other lines of trade with which we are acquainted) and if a black lister is on a ship in a responsible position the insurance rate at least is increased provided any at all is offered.

The owner of a vessel will spend hundreds of dollars in the engine room to buy the latest appliances and fixtures if he can see them spell increased efficiency, or, what is the same thing, economy; but this same owner will place in his pilot house a simple "boat" compass without any means for compensating it, and this will constitute the master's complete outfit of instruments for navigating purposes. It must be that ignorance is the sole reason for this discrimination. Owners will remain in this darkness until masters and mates or the underwriters take it upon themselves to enlighten them. In this task the underwriters have the whip hand, for they can reach that tender spot, the pocket. The owner who sees that the expenditure of a couple of hundred dollars for navigating instruments is for a permanent improvement and that it will, in time, save many hundreds of dollars in the cost of fuel alone, will be a pioneer on the lakes. Let us hope that he will not long delay his coming.

TRIAL OF STRENGTH BETWEEN TWO STEAMERS.

A trial of strength, rather peculiar in its nature, was had recently on the river at Charleston, W. Va., between the stern-wheel steamer D. T. Lane, owned by the Campbell Creek Coal Co., and the twin-screw steamer James Ramsey, built at the Ward Boiler Works, Charleston, W. Va. Mr. Charles Ward, builder of the Ramsey, believed that the screw type of vessel was better for river navigation than the stern-wheel type and he proposed a test of strength between them. The Ramsey is 120 ft. long, 22 ft. beam and 4 ft. 6 in. deep, equipped with quadruple-expansion engines that have cylinders of 7, 10, 14 and 20 in. diameter, and supplied with steam from a Ward upright boiler. The Lane is much bigger than the Ramsey, and it appears that the challenge was eagerly accepted. Both steamers were lashed end to end and the trial of strength began. Despite the force of the current, which was in favor of the Lane, the Ramsey slowly pushed the stern-wheeler up stream. Three separate tests were then made, in every one of which the screw steamer showed the better grip upon the water. Pushing or backing she carried the stern-wheeler with her. The natural speed of the Ramsey is 12 miles an hour.



Trial of strength between the twin-screw steamer James Ramsey and the stern-wheel steamer D. T. Lane.

REPORT OF OCEAN PASSENGER LINES.

Considering the business of the past year the North German Lloyd Steamship Co. has deemed it not prudent to declare a dividend. Almost all lines suffered from the low rates of freight but the homeward-bound North Atlantic cargo traffic was especially unprofitable, while, on the other hand, the passenger traffic increased. After writing off 13,610,378 marks for depreciation the directors propose to utilize the net profits, amounting to 229,754 marks, in founding two pension funds—one for the men employed in the workshops and one for the coal heavers and dock laborers employed in the Weser ports. The directors say that the agreement entered into with the International Mercantile Marine Co. has so far produced favorable effects, although the expected improvement in cabin passenger rates had not supervened, owing to the reluctance of the lines outside of the combination to agree to an increased tariff. In connection with this branch of the company's business the directors record the fact that they, jointly with the International Mercantile Marine Co. and the Hamburg-American Line, acquired the bulk of the shares in the Holland-American Line of Rotterdam.

Last year was unsatisfactory to the German Levant Line. Slack business, an overabundance of tonnage in all trades, and rates of freight lower in many cases than ever known before, were what the company had to contend with. The net profits, after allowing for depreciation, amounted to 200,526 marks, against 451,289 marks in 1901. The dividend declared was 3 per cent. as against 6½ per cent. for 1901 and 10 per cent. for 1900.

The German-Australian Steamship Co. of Hamburg pays a dividend of only 5 per cent. for the past year, against 8 per cent. for 1901 and 12 per cent. for 1900.

An English writer has recently described a modern battleship as the "last word that mechanical genius, naval construction and cash payment can say in aggressiveness." From the fighting top to the double bottom, from ram to stern post, she is the most complicated machine the mind of man ever conceived. There is scarcely a trade or an art that is not represented in her building. She is a house that must be lighted, ventilated, drained and painted. She is a fort that must carry guns of heaviest calibers for fighting other battleships; guns of medium size for piercing the comparatively thin protection of armored cruisers; scores of rapid firers for protecting herself against torpedo boats, and even a battery of small Colts for picking up sharpshooters or exposed men. Above all, she is also a ship to be taken to sea, to make passages from port to port and long ocean voyages. Moreover, she is a hostelry in which there are 700 men who must be clothed, fed and housed, and for whose use there is provided an ice plant having a capacity of 3 tons of ice per day, and evaporators that daily produce 16,000 gallons of fresh water; there is also a bakery and an enormous kitchen. Besides the ponderous main engines of say 16,000 H. P., there are perhaps nearly 100 auxiliary engines, or about the same number of electric motors. The boilers, with their 46,000 sq. ft. of heating surface, must not be forgotten, nor the coal bunkers, which, in the Oregon, for instance, have a capacity to carry that vessel 5,500 miles.

LIFE-SAVING APPLIANCES ON OCEAN STEAMSHIPS.

Safety at sea is a problem upon which many minds have been set. Ships are made very staunch nowadays but accidents will happen. The danger of internal weakness in the ship has been reduced to a minimum, but the fear of a collision is always present. One cannot see in a fog and sound is very deceptive. The great tragedies of the sea have been caused by collisions. When the blow is fatal and the ship settles rapidly it has been proved time and again that the life-saving appliances are not adequate. One of the great difficulties has been in launching the boats. The best devices for detaching life boats are not always used, and even when they are used, especially in a seaway, there is always the danger of capsizing life boats. The ship goes down with many passengers floating about in the water. It is this condition so often heard of in ship disasters that direct attention to the Carley life float. There can be no failure in launching this device, as all that is necessary to do is to throw it overboard. Whichever way it falls it will be right side up. The float consists of a copper tube, circular in form, to which is attached net work of a most durable character. All the passengers have to do is to crawl over the tube into the network. Of course they will be up to their waists in water but the purpose of the float is to save life and not to keep them dry. The float is non-sinkable, and is also non-capsizable in any condition which is likely to be met in the open sea. It contains receptacles for the care of provisions so that life might be maintained in case help should not be in sight. But as a rule in collisions only one vessel is fatally hurt; the other vessel is rarely rendered unseaworthy, and she usually stands by. The problem is to keep the passengers afloat until they can be picked up. Life boats cannot be launched with sufficient rapidity and in sufficient numbers to do this. Moreover the life boat needs competent management; the Carley life float requires no management at all. To demonstrate the need of something more than life boats as a part of the life saving equipment of a modern steamship it is only necessary to briefly recite the circumstances of the wrecks of two famous steamships—the Elbe of the North German Lloyd Line and the Bourgogne of the French Line.

Shortly after 6 o'clock on the morning of Jan. 30, 1895, the passenger ship Elbe was struck amidships by a small steamer off the coast of Suffolk, England. Many ships were near by but the big liner sank before help reached it. Only two boats were launched, one of which was smashed against the side of the vessel, and the other, containing the survivors were picked up by the fishing smack Wildflower and brought to port. The first news of the disaster was brought by the fishing vessel which brought the survivors to Lowestoft. But one woman, Miss Annie Boecker, a saloon passenger, was saved, and the story of the wreck altogether was one of the most harrowing tales of the sea ever told. The Elbe was bound from Bremen to New York with 240 passengers, 160 officers and crew. When the shipwrecked persons were brought ashore it was fully three hours before any of them recovered sufficiently to tell the story. The Elbe was about 50 miles off the coast of Suffolk. Many lights were seen, showing that a number of vessels were in the vicinity and the lookout sighted a steamer of about 1,500 tons bearing down toward them. Rockets of warning were sent up without effect and the smaller vessel held her course. She hit the Elbe aft of the engine room, and as she was wrenched away from the larger vessel she opened a large hole, and almost instantly the water filled the engine room and the liner began to settle. Most of the passengers were in bed. The boats were ordered lowered but with the heavy sea that was breaking completely over the steamer the first was swamped before anyone could get into it. The other boat managed to get safely away from the wreck and after several hours was picked up by the Wildflower. It was a sad commentary that of the twenty-five that were saved sixteen were officers or men belonging to the ship's company.

The French Line steamer Bourgogne was sunk in collision with the British ship Cromartyshire early on the morning of July 4, 1898. The disaster occurred 60 miles south of Sable island off the Halifax coast. Of the 743 souls on board, 535 were drowned, including 217 first and second-cabin passengers. All of the first-class passengers were lost, and of the 300 women on board only one was saved. The crash came at 5 o'clock in the morning, when the liner in a dense fog struck the iron British ship and passed on in the gray light to plunge to the bottom of the ocean. In the ten minutes that elapsed between the shock and the disappearance under the waves of the Bourgogne the greatest horror of the disaster was enacted. Women who obstructed the way to the boats were struck down by strong men with knives. In the steerage were many Italians coming to the new country and it appeared as though in the face of death the thirst for blood came on them. They cut and trampled on everyone who impeded their way to the boats, and the officers, who died as brave men should, were powerless to control their maddened passengers and crew. One raft, on board of which were forty women, was alongside and went down with the ship, owing to the fact that it could not be gotten away from the suction of the sinking liner. The Cromartyshire stood by for hours and kept up the work of rescuing. She was badly damaged and was finally towed to Halifax. Every officer of the Bourgogne went down with her, and the opportunity to lower boats and get away from the sinking craft was a short ten minutes. The Bourgogne was on her way from Havre to New York. In an interview with one of the passengers, Mr. Yeasir of New York, he said that the raft on which he managed to obtain a foothold was damaged and there was a large hole in it, materially impairing its efficiency. Grief was brought to many homes in New York and other American cities and many distressing scenes were viewed at the steamship offices. Capt. Deloncle, a French naval officer, was in command of the Bourgogne.

Details of numerous disasters of the kind above referred to might be given to show how often it happens that when most needed the life boats, and certainly those on the weather side of the ship, can not be successfully launched. Disaster is to be expected in unfavorable weather more so than in calm, and often the weather is such as to dash to pieces any life boat on the weather side of the sinking ship before it could be gotten away from the wreck.

TRADE UNDER FRENCH FLAG FALLING OFF.

A summary of statistics relating to the oversea trade of France for last year has just been published by one of the departments of the French government, the figures dealing only with laden vessels, and excluding the coasting trade between French ports, which is restricted to the national flag. These statistics, which cover that portion of the maritime trade of France that is open to foreign competition, to the trade with the colonies and to the deep sea fisheries, yield the following totals:

Entries.—French flag, 7,617 vessels and 4,746,694 tons; foreign flags, 17,327 vessels and 13,622,685 tons; total, 24,944 vessels and 18,369,379 tons.

Departures.—French flag, 7,603 vessels and 4,539,047 tons; foreign flags, 13,351 vessels and 9,196, 335 tons; total, 20,954 vessels and 13,735,382 tons.

The general total of entries and departures of laden vessels amounts, therefore, to 45,898 vessels (steamers and sailers), measuring altogether 32,104,761 registered tons, and when compared with the figures for 1901, there was an increase last year of 775,000 tons. The increase, however, falls exclusively to the credit of the foreign flags, and more especially to the departures There is, in fact, a falling off in the trade under the French flag to the extent of 10,000 tons, whereas in 1901 the national flag gained 285,000 tons when compared with 1900. The disastrous strikes at Marseilles probably had something to do with this unfavorable result. The percentage of the French flag in the maritime trade of French ports fell last year to 29 per cent., while that of the foreign flags went up to 71 per cent. Not far short of three-fourths of the French oversea shipping trade is consequently carried on by the vessels of other nations. The "competitive" or international shipping trade represents 87 per cent. of the general movement in French ports—say, 28,000,000 tons, entries and departures combined. In this category the share of the French flag, which reached 21,7 per cent. in 1899, fell to 19.2 per cent. in 1902. It is evidently the trade with Algeria (restricted to the national flag), with the colonies, and with the protectorates, that keeps the French mercantile marine alive—out of the general total of 4,000,000 tons in this category the foreign flag only counts for 234,000. Under this head the French flag experienced an improvement last year to the extent of 126,485 tons when compared with 1901, and it is this special tariff that absorbs nearly half of the oversea movement of the French merchant navy. As regards the share taken in the general movement last year by each separate port, the following are the figures, arrivals and sailings combined:

	Ships.	Tons.
Marseilles	7,862	9,463,872
Havre	3,588	3,909,237
Boulogne	3,609	3,039,965
Cherbourg	2,010	3,030,102
Bordeaux	2,361	1,782,464
Dunkirk	2,408	1,759,258
Calais	3,943	1,415,819
Rouen	1,740	1,069,489
Cette	1,600	937,568

The present position of the maritime trade of France, as illustrated by this latest batch of statistics, is scarcely calculated to provide much comfort for French shipowners, and the opinion is gaining ground in France that the new law relating to the bounties will fail to bring about an improvement.

Velthra, a twin-screw steam yacht built by the Gas Engine & Power Co. and Charles L. Seabury & Co., Consolidated, Morris Heights, New York, for S. Parker Bremer of Boston, had a trial on the Hudson this week. She was sent over a measured-mile course and her average speed was 23 miles an hour. Two successive trials were made. On the first trial up the river she made 21.31 miles an hour; and the trial down the river she speeded at 24.67 miles an hour. The guaranteed speed was 20 miles an hour, and the owner expressed himself as highly pleased with the performance. He congratulated the designer, Mr. Charles L. Seabury, who was aboard.

NEW NAMES FOR NAVAL VESSELS.

An effort to revive in new navel vessels the names of those American ships which brought honor to the flag in the war of 1812 is being made by Rear-Admiral Bowles, chief naval constructor. He has recommended to Secretary Moody that the two training ships and the training brig authorized by the last congress be called the Hornet, the Peacock and the Boxer, respectively. The Peacock was a captured British vessel, but there has always been a strong sentiment among naval men, for patriotic and historical reasons, in favor of perpetuating in the American navy the names of foreign ships of war which lowered their flags to American fighting craft. Secretary Moody will probably follow the recommendations of Admiral Bowles.

The two training ships are to cost $350,000 each and the brig $50,000. Under a law of congress the names of states of the union must be bestowed on armored vessels of the first rate. This requirement has caused much dissatisfaction among naval officers, many of whom have insisted that the names of the old frigates and other ships which gave the United States a claim to being mistress of the seas should be revived in battleships and armored cruisers. It has been pointed out as a curious thing that the only vessel of the period nearly a hundred years ago, when France and England harassed American commerce, whose name has been perpetuated in an American naval craft, recently built, was the ill-fated Chesapeake, twice captured and never victorious. The new Chesapeake is a practice vessel for midshipmen, and some naval men hold that this is the very last use to which a ship of that name should be put, on account of the inability of the future officers who man her to take pride in her through remembering the deeds of her predecessor. The battleship Kearsarge, named by special direction of congress, affords the only instance of the perpetuation of the name of a noted American ship in a modern armor clad. Some of the famous names of 1812, such as the Wasp, the Frolic and the Scorpion, were bestowed on converted yachts purchased for use in the war with Spain, but these are not big enough to make them of any service in an important naval battle.

There is a strong feeling in the navy toward changing the nomenclature so as to permit the use of Indian names and the names of famous American fighting vessels for modern armor-clads. But it is not probable that this will be done until every state in the union has had its name bestowed upon a warship. There are now thirty-nine vessels on the naval list, built and building, which bear the names of states. This leaves only six more states to be provided for, but as the vessels called for New Hampshire and Michigan are old and must soon be stricken from the list, it will be necessary for congress to authorize the construction of eight more first-class armor-clads before the present nomenclature law will be changed. The states on the waiting list are Delaware, North Corolina, South Carolina, North Dakota, Utah and Montana.

The naval board which has been conducting tests with fuel oil has begun its experiments with the California product. It is the intention of the board to ascertain what grade of oil is best adapted to naval use and at the same time to determine the most effective means of burning oil as a substitute for coal on shipboard, principally in the smaller vessels of the navy. The question is important and many firms throughout the country are awaiting the results of the board's investigations with keen interest. The board has been experimenting with the product of the Texas fields and has accumulated valuable data to be used in comparison with the results of the test of the California oil. The board has rejected as unsuitable for naval uses the burner used on western railroads. Some 200 locomotives on a transcontinental line are equipped with this apparatus and it was believed by the railroad people that it would be of use in the navy. It was found, however, that the conditions were altogether different and that the locomotive burner did not give the high pressure demanded by the naval burner.

Specifications for boilers to be installed in the new lighthouse tenders Magnolia and Ivy, building at Baltimore, call for the use of Falls Hollow staybolts. The Falls Hollow Staybolt Co. of Cuyahoga Falls, O., manufacturers of these staybolts, report a steady increase in the demand for them, especially in works following the best boiler practice. Railroads all over the country specify them in ordering locomotives and use them themselves when making and repairing locomotive boilers. The Falls company continues also the manufacture of solid staybolt material, which is made from the same high-grade double-refined charcoal iron that is used in the hollow staybolts. Mr. A. M. Baird of 832 Jackson street, Topeka, Kas., was recently appointed to represent this company in Topeka and vicinity. Mr. Baird was formerly boiler maker at the Santa Fe Ry. shops at Topeka. He has also been in the employ of several of the leading western railroads in the capacity of foreman boiler maker. He is the inventor of several compressed air tools, among them the Baird staybolt nipper.

Kaiser Wilhelm II., the new steamship of the North German Lloyd Line, reached Sandy Hook from Cherbourg in five days and twenty-three hours, making the record for the maiden trip of any vessel, but not, of course, equaling the Deutschland's subsequent record for the westward voyage.

AN OBJECT LESSON.

Editor Marine Review:—The following figures by decade years bring home to us a realization of what we are yearly losing in freights on our imports and exports which are not carried in American vessels. The figures represent millions of dollars:

	In American vesels.	In foreign vessels.
Imports.		
1860	228	134
1870	153	309
1880	149	503
1890	124	623
1900	104	701
1901	93	683
1902	102	744
Exports.		
1860	279	121
1870	199	329
1880	109	720
1890	77	747
1900	90	1,193
1901	84	1,291
1902	83	1,174

Then take our total imports and exports for the forty-three years, 1860-1902:

Imports in American vessels	$ 6,369,000,000
Exports in American vessels	5,271,000,000
Total in American vessels	$11,640,000,000
Imports in foreign vessels	$18,722,000,000
Exports in foreign vessels	25,664,000,000
Total in foreign vessels	$44,386,000,000

On all of which $44,386,000,000 we lost the freights by reason of our lack of ocean merchant marine. In other words we have paid foreigners for carrying over a thousand millions yearly of our foreign commerce. It is up to congress to stop this heavy annual drain on our national resources. WALTER J. BALLARD.

Schenectady, N. Y., April 20, 1903.

Before President Roosevelt left on his western trip he took the first step in an act of international courtesy which was completed at Kincardine, Ont., last week. Eight gold medals, given in recognition of their bravery in saving the lives of the crew of an American schooner, were presented in the name of the president by United States Consul Shirley of Goderich to citizens of Kincardine. On the night of Oct. 7, last, in a terrific gale, the schooner Ann Maria, bound from Cleveland to Milwaukee with coal, was wrecked off Kincardine. Citizens gathered on the lake shore determined to attempt a rescue. Four men entered a small boat, and after great exertion took the crew aboard. Just as the boat started to return a wave filled the rowboat, and its occupants were thrown into the water. There followed a long, hard struggle with the storm. Wm. Ferguson, one of the rescuing party, and four of the schooner's crew were lost. Thomas, John and Walter McGraw, the remaining rescuers, succeeded in regaining the wrecked vessel, dragging two American sailors with them. Another boat was sent out, and rescuers and rescued were brought ashore. The eight principals in the rescue were given humane society medals, but not until recently was it known that President Roosevelt had given attention to their efforts.

The United States steamer Visitor on Saturday, April 18, stopped at Starve island reef where an examination was made of the wreck of the schooner A. Mosher which stranded on this reef in the latter part of November, 1902. On Dec. 1, 1902, the vessel was found lodged on the peak of the reef. A short time after this it disappeared, and it is now found that a large amount of wreckage lies on the bottom just south of the reef. A portion of one of the spars projects about 1½ ft. above the water, 150 ft. south of the reef. So far as found, all the wreckage lies between the red can lighted buoy and the reef, and is therefore not a menace to navigation. It is, of course, possible that some parts might have drifted far from this location but it is not considered likely that any parts which would not drift ashore will be found outside the red can buoy. A red flag has been nailed to the stump of the spar and arrangements will be made for the removal of such parts as can be reached.

The Great Lakes Laundry Co. at Sault Ste. Marie, Mich., has been reorganized with a capital stock of $36,000 and the election of the following offices: William F. Everett, president; W. C. Everett, secretary and treasurer; Ed. Crisp, vice-president and manager. The laundry is most auspiciously located to do the work of the marine trade, and the keeping of clothes and linens cleanly works out to a respectable figure in the cost-sheet of a steamer. An altruistic spirit prevades this laundry for it takes excellent care of its employes and even provides a rest room for the women. It is equipped throughout with the finest of machinery, its mangles being the product of the New York Laundry Machine Co. The machinery is run by a 50-H. P. high-speed automatic engine and the water is supplied from a hot water heater of 10,000 gallons capacity per day. The laundry has its own gas plant complete and can either use gas or electricity for heating irons.

Mr. P. E. Stevenson, formerly with Gardner & Cox, naval architects and yacht brokers of New York, has gone into the polish business and is now president of the Williams & Sanders Mfg. Co., with offices at 29 Broadway, New York. The company manufactures superior liquid polishes for both finished metal and woodwork, which being entirely devoid of acid is guaranteed not to stain or injure anything with which it may come in contact. It removes grease, bituminous coal smoke stain and all manner of dirt and corrosion, and is especially recommended for use on shipboard and in railway cars. The company furnishes a free sample can of polish for either wood or metal, where a trial is desired before a purchase is made.

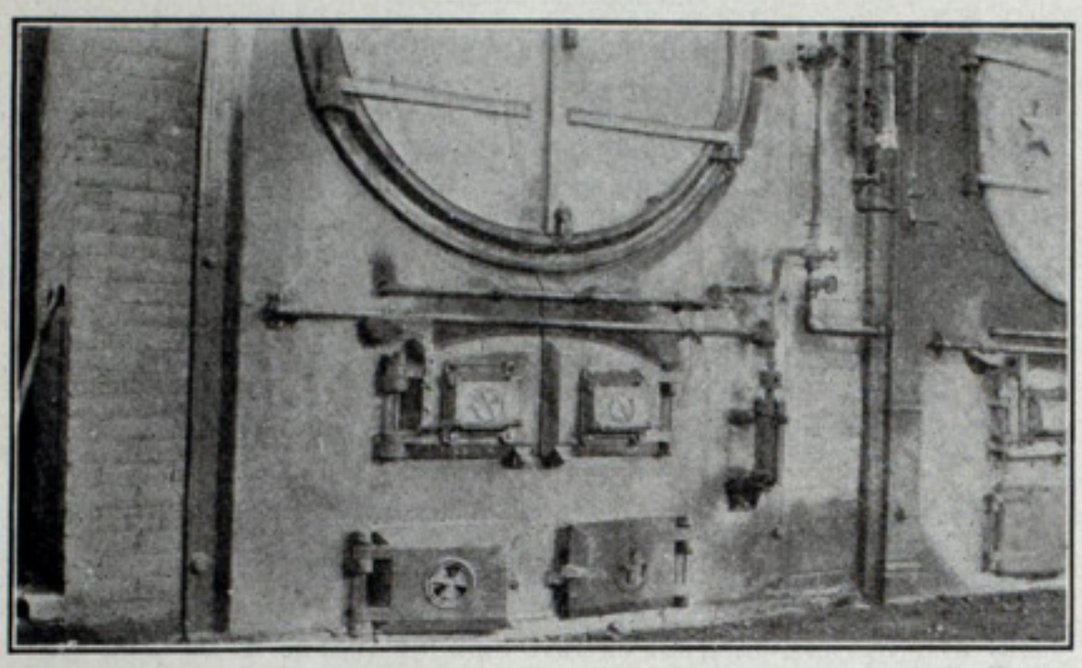
Joseph Lenert, No. 157 Division street, Chicago, has made special arrangements for a large grocery trade among the vessels this season. He will make a point of special service for the marine trade, and to this end has secured a new gasoline yacht and has provided an extra telephone that is to be used exclusively for vessel orders.

On Wednesday the Monroe C. Smith, building at the Lorain yard of the American Ship Building Co. for the United States Transportation Co., was launched. Miss Bessie Smith of Syracuse, N. Y., christened the steamer. The Monroe C. Smith is one of the vessels building to the order of the late Capt. W. W. Brown.

The five-masted steel schooner building in the yard of Arthur Sewall & Co., Bath, Me., has been named Kineo. She will be launched early in May.

McCUE SMOKE CONSUMER.

Both the large side-wheel steamers of the Detroit & Buffalo Line are to be equipped this year with the McCue device for the consumption of smoke and much is expected of it. This device, patented by Mr. T. W. McCue and manufactured by the Cleveland Automatic Smoke Co., is very simple. Its installation is trifling in cost and its up-keep practically nothing. It consists merely of spraying steam above the living bed of coals at such times as the fire is replenished. Steam is carried to the coals through incisions in the furnace doors by means of pipes from the boilers, and through the medium of a patent lip it is spread in the form of a blanket above the coals. At



Showing how the steam is conveyed to the furnace by the McCue device.

the same time air is admitted from the grate doors beneath and combustion thereby secured. The black smudge of smoke, usually caused by adding new coal, is held by the blanket of steam until all the carbon in it is consumed. The smoke that escapes is cleaned and dissipated, like steam, the moment it reaches the open air. The device has been installed on the tug Frank W. in the harbor at Cleveland and affords a fine object lesson as to its utility. When the device is turned off dense volumes of smoke emerge from the stack; when it is turned on the smoke, rid of its carbon, becomes thin and vanishes quickly. Aside from cleanliness, which in itself has paramount advantages for the passenger trade, the saving of fuel is said to be a considerable item. Statements are adduced to the effect that the saving in the fuel bill is from 15 to 20 per cent. The claim is made for this device that it will consume 80 per cent. of the black smoke; that it will facilitate the raising of steam; that it will reduce the coal bill; and that it will keep the flues clean and create a draft.

Among Cleveland concerns at present using the device are the Big and Little Consolidated railways in power houses, the Schorndorfer & Eberhard Mfg. Co., the D. O. Summers Carpet Cleaning Co., the Chandler & Price Co., the Ellington apartment house, the Forest City house, the Weddell house, the Standard Tobacco Co. and the Cleveland Laundry Co. The factory of the Cleveland Automatic Smoke Co. is located in Akron, while the offices are in the Chamber of Commerce building, Cleveland.

ALLEN PNEUMATIC RIVETERS.

New York, April 22.—Another yankee invasion of Europe is being made by American manufacturers of pneumatic riveting machines, the demand for which from that quarter is constantly increasing. John F. Allen, Gerard avenue, New York, manufacturer of three styles of pneumatic riveting machines, covering all requirements from heaviest to lightest work, shipped ten of his machines, cost $3,000, to France last week, through the exporting house of H. W. Peabody & Co. of 17 State street, New York, who report a good foreign demand for these machines, which are particularly adapted for ship yard and kindred uses.

The Allen riveting machines are not unknown about the great lakes, all three styles being used by the Brown Hoisting Machinery Co. of Cleveland, while three machines have lately been shipped to Kaltenbach & Griess, also of that city. The United States government is a constant patron of these riveters, a 96-in. reach machine having lately been furnished the United States navy yard at Mare Island, and another to the United States arsenal at Rock Island.

The great structural steel works of Milliken Bros., Brooklyn, now being erected at Howland's Hook, Staten island, which when complete is to be the largest plant of its kind in the country, is being furnished with $4,000 worth of the Allen riveters as a starter, and the works are kept at full capacity filling orders which keep constantly increasing as the merits of the riveter become more generally understood.

One of the young officers of the navy is likely to get a place in the construction corps by reason of his inability to go to sea on account of seasickness. The medical officers of the navy have pronounced his case of seasickness incurable, and life in the navy as a line officer would mean long periods of distress. Some naval officers are always more or less affected by the rolling and pitching of a ship at sea, but there has rarely been a case where the disability was advanced as a good reason for an officer to be transferred from the line to the staff. The case is that of Midshipman Richard D. Gatewood, who was graduated well up toward the head of his class at the naval academy. He is a son of the late naval constructor Richard Gatewood of the navy. He has been doing excellent work on board the Wisconsin, whose commanding officer recommends the approval of his application for transfer to the naval construction corps. Rear Admiral Taylor, chief of the bureau of navigation, does not favor the application, nor that of two other midshipmen who are anxious to become naval constructors, and for whose services Rear Admiral Bowles has made a special plea. The bureau of navigation insists that it needs all the line officers it can get, and that the naval constructors should not be drawn from graduates of the naval academy under the present stress of circumstances. Rear Admiral Bowles has succeeded in getting the matter held up for Mr. Moody's consideration, and he will make a special argument in favor of the assignment to his corps of a number of naval constructors. Even this assignment will not help the corps much, since it will require several years of instruction to impart the required experience and ability to an appointee.

J. D. Potter & Co., 11 King street, Tower Hill, London, have issued the twenty-sixth edition of A. C. Johnson's book "On finding the Latitude and Longitude in Cloudy Weather." Practical navigators have held this book to be one of the best published. The senior navigating officer of the squadron employed in towing out the great Bermuda dock says: "During the passage I seldom got the sun at noon, and, had it not been for your double chronometer method I don't know what might have been the consequences, for we had hardly taken in our moorings when it came on to blow in a most violent manner."

The treasury department has ruled that on the exportation of cast iron sole plates manufactured by the William Cramp & Sons Ship & Engine Co. of Philadelphia, wholly from imported pig iron, a drawback will be allowed equal to the duties paid on the imported material therein used, less the legal deduction of 1 per cent. No allowance will be made on the valuable waste, but for each 100 lbs. of imported pig iron shown to have been used and exported there shall be allowed 4 lbs.

Owing to the state of the Mississippi river the battleship Illinois will be sent to Norfolk to dock. The department was unwilling to risk the vessel at the Algiers dry dock.

ITEMS OF GENERAL INTEREST.

The King and Navy and Army, two illustrated weekly periodicals devoted to the affairs of the British empire and published in London, have been combined under the title, The King and His Navy and Army. The new publication combines the merits of both and adds the studio and stage to the weekly causerie of army and navy life.

The steam yacht Philomenia, which was built for William Amory of Boston, has been sold by Nathaniel L. Francis to Mr. Cyrus Curtis of Philadelphia. The Philomenia is an attractive little steamer about 65 ft. on the water line, 80 ft. over all, 14 ft. beam and 6 ft. draught. She has a small deck dining saloon, commodious cabin and stateroom, and has all modern conveniences.

At the annual meeting of the shareholders of the Cunard Steamship Co. last week Lord Iverclyde, the chairman, said that the essence of the agreement with the government was that the company should remain purely British as to shareholders, ships, board officials, employes, management and control. The chairman said that the directors had not yet placed orders for the construction of the two 25-knot steamships.

Among vessels recently classed and rated by the American Bureau of Shipping in the "Record of American and Foreign Shipping" of New York are the following: American screw steamer Mississippi, owned by Atlantic Transport Co.; American screw steamer Monroe, owned by Old Dominion Steamship Co.; American schooners Florence M. Penley and Gardiner G. Deering; American barkentine John Swan; American three-masted schooner Edward R. Baird and British schooner Howard.

The appointment by President Roosevelt of Mr. Geo. Uhler as supervising inspector general of steam vessels did not disturb the national organization of the Marine Engineers' Beneficial Association. Vice-President Jones of San Francisco succeeded Mr. Uhler to the presidency and there is now only one vice-president. The executive officers of the national organization are: Frank A. Jones, president, 2018 E. Cumberland street, Philadelphia; Evans I. Jenkins, vice-president, 149 Clinton street, Cleveland; Geo. A. Grubb, secretary, 1318 Wolfram street, station Lake View, Chicago; Albert L. Jones, treasurer, 289 Champlain street, Detroit. Members of the advisory board are: Wm. F. Yates, front of E. Twenty-sixth street, New York; Joseph Brooks, 6323 Dicks avenue, Philadelphia; Wm. Sheffer, 1031 W. Hopkins avenue, Baltimore.

MARINE ENGINE OILS.

Concerning his recent address at Cleveland before the marine engineers on the subject of "Lubrication," Mr. H. A. Drury of the Standard Oil Co. says: "Vacuum No. 1 marine engine oil is not a light but a very heavy bodied oil with a much larger drop than has lard oil. I did not say it would not lubricate where water was used, but did say that while it was found necessary to run water on bearings that were lubricated with lard oil to keep them cool, such was altogether unnecessary where Vacuum No. 1 marine engine oil was the lubricant, as it reduced friction so completely that the bearings did not become heated, hence water was uncalled for. We deprecate the use of water with that oil, as the best results are obtained without, and our experience has demonstrated that the only purpose served by running water on bearings is to cool them, and if their temperature is maintained at a minimum, water is manifestly superfluous, and if its use does not result in injury to the metal, no good results accrue."

REDUCED FARES VIA PENNSYLVANIA LINES.

Excursion tickets will be sold via Pennsylvania Lines as follows:

To St. Louis, Mo., April 26 and 27 account national and international good roads convention.

To St. Louis, Mo., April 29 and May 1, inclusive, account dedication ceremonies, Louisiana Purchase Exposition.

To New Orleans, La., May 1 and 3 inclusive, account the American Medical Association.

To St. Louis, Mo., June 6 and 17 account thirty-first saengerfest of North American Saengerbund.

To Boston, Mass., July 2 to 5, inclusive, account National Educational Association.

For particulars consult ticket agent of Pennsylvania Lines.

Sunday outing excursions on the Nickel Plate road begin April 19, 1903, to continue every Sunday until further notice. Fare $1 each person, in parties of five or more traveling together and returning same day. Tickets good between any two stations within a distance of 100 miles. For particulars apply to nearest ticket agent. E. A. Akers, C. P. & T. A., Cleveland, O. May 7.

Tug, Scow, Etc.

For Sale.—Tug, scow and sand pump. All in good order. Price reasonable. Address Butler Bros., St. Paul, Minn.
Apr. 30.

Steam Yacht for Sale.

Steam yacht, 35 ft. over all, 7-ft. beam. Fitted for salt water use. Burns kerosene. Is in fine order. Will be sold cheap. J. L. Alberger, 695 Ellicott Square, Buffalo, N. Y. Apr. 30.

Steamer Imperial for Sale.

Has been running with freight and day passengers (licensed to carry 220) between Windsor, Amherstburg and Pelee Island No cabin accommodations for passengers Screw steamer built at Toronto in 1866; rebuilt in 1897. Wooden hull of 109 ft. length and 22 ft. width. Steeple compound engines of 12 and 16 in. Engines were compounded only six years ago and have been well kept up. Boiler of ample size and in good condition. Address Box 42, the Marine Review Pub. Co., Wade Bldg., Cleveland, O. tf

U. S. Engineer Office, Grand Rapids, Mich , April 6, 1903. Sealed proposals for Repair of Piers at St. Joseph and Black Lake Mich., will be received here until 3 P. M., May 6, 1903, and then publicly opened. Information furnished on application. J G. WARREN, Major Engrs. April 30

Launch Wanted.

Wanted an open launch 30 ft. long and about 12 to 16 horse power. Send price and full particulars to Box 43, Marine Review Pub. Co., 39-41 Wade Bldg., Cleveland, O. t. f.

Side-Wheel Passenger Steamer.

For Sale—Passenger and freight steamer Urania. British registry. Built at Milwaukee in 1875 and then named Flora. Rebuilt in 1899 with engines from revenue cutter Andrew Johnson. Wooden hull. Three decks. Length 180 ft.; breadth 27 ft. 4 in. Thirty-three staterooms, 98 berths. Allowed 98 first-cabin and 402 steerage passengers. Speed 13 miles. Electric light plant practically new. Engines and boilers were thoroughly overhauled when transferred to this hull and have been well kept up. Urania has been running between Cleveland and Port Stanley and fuel consumption for day and night trips on run was about 400 tons per month. Address Box 41, the Marine Review Pub. Co., Wade Bldg., Cleveland. tf.

Books on Naval Architecture, Ship Yard Practice, Seamanship, Etc.

AMERICAN MERCHANT MARINE—Winthrop L. Marvin. A history of American Ships and Shipping. $2.

AMERICAN PRACTICAL NAVIGATOR---Nathaniel Bowditch. $2.25.

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KNOW YOUR OWN SHIP---Thos. Walton. $2.50.

MANUAL OF ALGEBRA---R. C. Buck. For the use, more especially, of young sailors and officers in the merchant navy; numerous examples and exercises. $1.50.

MARINE INSURANCE. W.Gow. $1.50.

MARINER'S COMPASS IN AN IRON SHIP: How to keep it efficient and use it intelligently. J. W. Dixon. $1.

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Ross Valve Co. .....Troy, N. Y.

FIXTURES FOR LAMPS, OIL AND ELECTRIC.

General Electric Co. .....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

FORGES.

Buffalo Forge Co. .....Buffalo.
Sturtevant, B. F. Co. .....Boston.

FORGINGS FOR CRANK, PROPELLER OR THRUST SHAFTS, ETC.

Cleveland City Forge & Iron Co. .....Cleveland.
Fore River Ship & Engine Co. .....Quincy, Mass.
Macbeth Iron Co.....Cleveland.

FLUE WELDING.

Fix's, S. Sons .....Cleveland.

FURNACES FOR BOILERS.

Continental Iron Works.....New York.

FUELING COMPANIES AND COAL DEALERS.

Castner, Curran & Bullitt (Pocahontas) ....Phila.
Graham Coal & Coke co., Ldt.....Detroit.
Hanna, M. A. & Co. .....Cleveland.
Pickands, Mather & Co. .....Cleveland.
Pittsburg Coal Co. .....Cleveland.
Rochester & Pittsburg Coal & Iron Co. ....Buffalo.
Smith, Stanley B. & Co. .....Detroit.
Youghiogheny & Lehigh Valley Coal Co...Chicago.

GASKETS, RUBBER.

New York Belting & Packing Co.....New York.

GAS BUOYS.

Safety Car Heating & Lighting Co. ..New York.

GAS AND GASOLINE ENGINES.

Chase Machine Co. .....Cleveland.

GAGES, STEAM AND VACUUM.

American Steam Gauge Co. .....Boston.
Ashton Valve Co. .....Boston.

GRAPHITE.

Dixon Crucible Co., Joseph .....Jersey City, N. J.

HAMMERS, STEAM.

Chase Machine Co. .....Cleveland.

HARDWARE, SHIP.

Topky Brothers .....Ashtabula, O.

HATCH GEARS.

"Long-Arm" System Co. .....Cleveland.

HEATING APPARATUS.

Buffalo Forge Co. .....Buffalo.
Sturtevant, B. F. Co. .....Boston.

HOISTS FOR CARGO, ETC.

American Ship Building Co.....Cleveland.
Brown Hoisting Machinery Co., Inc. ....Cleveland.
Chase Machine Co. .....Cleveland.
Elwell-Parker Electric Co. .....Cleveland.
General Electric Co. .....New York.
Hyde Windlass Co. .....Bath, Me.
Lidgerwood Mfg. Co.....New York.
Marine Iron Co. .....Bay City.
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

HOLLOW STAYBOLT IRON.

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.

HOSE FITTINGS.

Farnan Brass Works. .....Cleveland.

HOSE, RUBBER.

New York Belting & Packing Co.....New York.

HYDRAULIC MACHINERY.

Watson-Stillman Co., The.....New York.
Wood & Co., R. D. .....Philadelphia.

ICE MACHINERY.

American Linde Refrigerating Co. .....New York.
Roelker, H. B. .....New York.

INDICATORS FOR STEAM ENGINES.

American Steam Gauge Co. .....Boston.
Ashton Valve Co. .....Boston.

INJECTORS.

American Injector Co.....Detroit.
Crane Co. .....Chicago.
Jenkins Bros. .....New York.
Lunkenheimer Co. .....Cincinnati.
Penberthy Injector Co. .....Detroit, Mich.

INSURANCE, MARINE.

Brown & Co. .....Buffalo.
Brown, W. W. .....Cleveland.
Dunham, R. J. .....Chicago.
Elphicke, C. W. & Co. .....Chicago.
Fleming & Co., P. H.....Chicago
Hawgood & Co., W. A. .....Cleveland.
Helm & Co., D. T.....Duluth.
Hutchinson & Co. .....Cleveland.
Insurance Co. of North America....Philadelphia
McCarthy, T. R. .....Montreal.
McCurdy, Geo. L. .....Chicago.
Mitchell & Co. .....Cleveland.
Peck, Chas. E. & W. F. ...New York and Chicago.
Richardson, W. C. .....Cleveland.
Sullivan, D. & Co. .....Chicago.
Weeks, F. H. .....New York.

IRON ORE AND PIG IRON.

Bourne-Fuller Co. .....Cleveland.
Hanna, M. A. & Co. .....Cleveland.
Pickands, Mather & Co. .....Cleveland.

LATHE, FOR CUTTING PIPE THREADS.

Kent Machine Works .....Brooklyn, N. Y.

LAUNCHES—STEAM, NAPHTHA, ELECTRIC.

Marine Construction & D. D. Co.....
.....Mariner's Harbor, S. I., N. Y.
Truscott Boat Mfg. Co.....St. Joseph, Mich.
Warrington Iron Works .....Chicago.
Willard, Chas. P. .....Chicago.

LIFE FLOATS.

Carley Life Float Co.....New York.

LIFE PRESERVERS, LIFE BOATS, BUOYS.

Armstrong Cork Co. .....Pittsburg.
Drein, Thos. & Son .....Wilmington, Del.
Kahnweiler's Sons, D. .....New York.
Lane & DeGroot .....Long Island City, N. Y.
Marine Construction & Dry Dock Co.....
.....Mariner's Harbor, S. I., N. Y.

LIGHTS, SIDE AND SIGNAL.

Helvig, H. A. J.....New York.
Russell & Watson .....Buffalo.

LOGS.

Walker & Sons, Thomas .....Birmingham, Eng.
Nicholson Ship Log Co. .....Cleveland.
Also Ship Chandlers.

LUMBER.

Martin-Barriss Co.....Cleveland.
Moran Bros. Co.....Seattle, Wash.

MACHINISTS.

Chase Machine Co.....Cleveland.
Macbeth Iron Co. .....Cleveland.
Union Machine & Boiler Co.....Cleveland.
Ward Machine Co.....Cleveland.

MACHINE TOOLS (WOOD WORKING).

Atlantic Works, Inc. .....Philadelphia.

MACHINERY, NEW AND SECOND HAND.

Bowler & Co. Geo. H. .....Cleveland.
Clyde Machine Works.....Chicago.

MAN-HOLES, SWING DOORS, ETC.

"Long-Arm" System Co. .....Cleveland.

MARINE RAILWAYS, BUILDERS OF

Crandall & Son, H. I. .....East Boston, Mass.

MATTRESSES, CUSHIONS, BEDDING.

Fogg, M. W.....New York.

MECHANICAL DRAFT FOR BOILERS.

American Ship Building Co. .....Cleveland
Bloomsburg & Co., H. .....Baltimore, Md.
Buffalo Forge Co. .....Buffalo.
Detroit Ship Building Co. .....Detroit.
Sturtevant, B. F. Co. .....Boston.

METALLIC PACKING.

American Metallic Packing Co.....Cleveland.
Hayden Mfg. Co., N. L.....Columbus, O.
Katzenstein, L. & Co. .....New York.
U. S. Metallic Packing Co. .....Philadelphia.

METAL POLISH.

Bertram's Oil Polish Co. .....Boston.

MOTORS, GENERATORS—ELECTRIC.

Buffalo Forge Co. .....Buffalo.
Electro-Dynamic Co. .....Philadelphia.
Elwell-Parker Electric Co. .....Cleveland.
General Electric Co. .....Schenectady, N. Y.
"Long-Arm" System Co. .....Cleveland.
Sturtevant, B. F. Co. .....Boston.
United Marine Mfg. & Supply Co.....New York.
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

NAUTICAL INSTRUMENTS.

Bliss, John & Co. .....New York.
Ritchie, E. S. & Sons .....Brookline, Mass.

NAVAL ARCHITECTS.

Gaskin, Edward .....Buffalo.
Kidd, Joseph .....Duluth, Minn.
Logan, Robert .....Cleveland.
Mosher, Chas. D. .....New York.
Newman, R. L. .....New York.
Sadler, Perkins & Field.....New York
Wood, W. J. .....Chicago.

OAKUM.

DeGrauw, Aymar & Co. .....New York.
Stratford Oakum Co.,.....Jersey City, N. J.

OILS AND LUBRICANTS.

Dixon Crucible Co., Joseph .....Jersey City, N. J.
Standard Oil Co. .....Cleveland.

PACKING.

American Metallic Packing Co. .....Cleveland.
American Steam Packing Co. .....Boston.
Crane Co. .....Chicago.
Hayden Mfg. Co., N. L.....Columbus, O.
Jenkins Bros. .....New York.
Katzenstein, L. & Co. .....New York.
New York Belting & Packing Co.....New York.
United States Metallic Packing Co. ....Philadelphia.

PAINTS.

Baker, Howard H. & Co. .....Buffalo.
Berry Bros., Ltd. .....Detroit.
Mohawk Paint & Chemical Co.....New York.
New Jersey Zinc Co. .....New York.
Topky Brothers .....Ashtabula, O.
Upson-Walton Co. .....Cleveland.

PATENT ATTORNEYS.

Thurston & Bates .....Cleveland.

PATTERN SHOP MACHINERY.

Atlantic Works, Inc. .....Philadelphia.

PIPE—BRASS AND COPPER, IRON PIPE SIZE.

Waterbury Brass Co.....New York.

PIPE, WROUGHT IRON.

Bourne-Fuller Co .....Cleveland.
Crane Co .....Chicago.
Macbeth Iron Co.....Cleveland.

PLANING MILL MACHINERY.

Atlantic Works, Inc. .....Philadelphia.

PLATE BENDING AND PLANING MACHINES.

Wood & Co., R. D. .....Philadelphia.

PLUMBING, MARINE.

Mott, J. L., Iron Works .....New York.
Reilly Repair & Supply Co., James....New York.
Sands, Alfred B. & Son .....New York.

PNEUMATIC TOOLS.

Allen, John F., ... New York.
Chicago Pneumatic Tool Co. .....Chicago.

POLISH FOR METALS.

Bertram's Oil Polish Co.....Boston.

POWER DOORS AND HATCHES.

"Long-Arm" System Co. .....Cleveland.

PRESSURE REGULATORS.

Kieley & Mueller .....New York
Ross Valve Co. .....Troy, N. Y.

BUYERS' DIRECTORY OF THE MARINE TRADE.—Continued.

PROPELLER WHEELS.

American Ship Building Co. .....Cleveland
Atlantic Works .....East Boston, Mass.
Bath Iron Works, Ltd. .....Bath, Me.
Cramp, Wm. & Sons.....Philadelphia.
Crescent Ship Yard Co .....Elizabethport, N. J.
Detroit Ship Building Co. .....Detroit.
Fore River Ship & Engine Co. .....Quincy, Mass.
Great Lakes Engineering Works.....Detroit.
Hyde Windlass Co. .....Bath, Me.
Jenks Ship Building Co. .....Port Huron, Mich.
Lockwood Mfg. Co. .....East Boston, Mass.
Macbeth Iron Co.....Cleveland.
MacKinnon Mfg. Co. .....Bay City, Mich.
Maryland Steel Co. .....Sparrow's Point, Md.
Milwaukee Dry Dock Co. .....Milwaukee.
Moran Bros. Co. .....Seattle, Wash.
Neafie & Levy Ship & Engine Bldg. Co.....Phila.
Newport News Ship Bldg. Co...Newport News, Va.
Phosphor Bronze Smelting Co., Ltd...Philadelphia.
Pusey & Jones Co. .....Wilmington, Del.
Risdon Iron Works .....San Francisco.
Roelker, H. B. .....New York.
Sheriffs Mfg. Co. .....Milwaukee.
Superior Ship Building Co.....Superior, Wis.
Thropp & Sons Co., J. E. .....Trenton, N. J.
Trigg, Wm. R. Co. .....Richmond, Va.
Trout, H. G. .....Buffalo.
United States Shipbuilding Co..... .....New York.

PROJECTORS, ELECTRIC.

Elwell-Parker Electric Co. .....Cleveland.
General Electric Co. .....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co....Pittsburg, Pa

PUMPS FOR VARIOUS PURPOSES.

Blake, Geo. F. Mfg. Co. .....New York.
Clyde Machine Works .....Chicago.
Great Lakes Engineering Works.....Detroit.
Kingsford Foundry & Machine Wks. Oswego, N. Y.
Long Arm System Co. .....Cleveland.

PUNCHES, RIVETERS, SHEARS.

Chicago Pneumatic Tool Co. .....Chicago.

REFRIGERATING APPARATUS.

Roelker, H. B. .....New York.

REGISTER FOR CLASSIFICATION OF VESSELS.

Great Lakes Register .....Cleveland.
Record of American & Foreign Shipping.New York.

RELEASING HOOKS FOR DETACHING BOATS.

Standard Automatic Releasing Hook Co. New York.

RIVETS, STEEL, FOR SHIPS AND BOILERS.

Bourne-Fuller Co. .....Cleveland.

RANGES.

Russell & Watson .....Buffalo.

RIVETS—BRASS AND COPPER.

Waterbury Brass Co.....New York.

RUBBER INSULATED WIRES.

Roebling's Sons, Jno. A...New York and Cleveland.

SAFETY VALVES.

American Steam Gauge Co. .....Boston.
Ashton Valve Co.....Boston.
Hayden Mfg. Co., N. L.....Columbus, O.
Lunkenheimer Co. .....Cincinnati.

SAIL MAKERS.

Baker, Howard H. & Co. .....Buffalo.
Upson-Walton Co. .....Cleveland.
Wilson & Silsby .....Boston.

SALVAGE COMPANIES.

See Wrecking Companies.

SCHOOLS—NAUTICAL, ENGINEERING.

Chicago Nautical School .....Chicago.

SEARCH LIGHTS.

Elwell-Parker Electric Co. .....Cleveland.
General Electric Co. .....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co....Pittsburg, Pa.

SHEARS.

See Punches, Rivets, and Shears.

SHIP AND BOILER PLATES AND SHAPES.

Bourne-Fuller Co. .....Cleveland.

SHIP BUILDERS.

American Ship Building Co. .....Cleveland.
Atlantic Works .....East Boston, Mass.
Bath Iron Works, Ltd.....Bath, Me.
Buffalo Dry Dock Co. .....Buffalo.
Columbia Iron Works.....Port Huron.
Cramp, Wm. & Sons.....Philadelphia.
Craig Ship Building Co. .....Toledo, O.
Chicago Ship Building Co.....Chicago.
Crescent Ship Yard Co.....Elizabethport, N. J.
Detroit Ship Building Co. .....Detroit.
Fore River Ship & Engine Co. .....Quincy, Mass.
Great Lakes Engineering Works.....Detroit.
Jenks Ship Building Co. .....Port Huron, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Manitowoc Dry Dock Co.....Manitowoc, Wis.
Marine Construction & Dry Dock Co.....
.....Mariner's Harbor, S. I., N. Y.
Maryland Steel Co .....Sparrow's Point, Md.
Milwaukee Dry Dock Co.....Milwaukee.
Moran Bros. Co. .....Seattle, Wash.
Neafie & Levy Ship & Engine Bldg. Co.....Phila.
Newport News Ship Bldg. Co....Newport News, Va.
Pusey & Jones Co. .....Wilmington, Del.
Risdon Iron Works .....San Francisco.
Roach's Ship Yard .....Chester, Pa.
Smith & Son, Abram .....Algonac, Mich.
Trigg, Wm. R. Co. .....Richmond, Va.
United States Shipbuilding Co.....New York.
Warrington Iron Works .....Chicago.
Willard, Chas. P. & Co. .....Chicago.

SHIP CHANDLERS.

Baker, Howard H. & Co. .....Buffalo.
Moran Bros. Co. .....Seattle, Wash.
Reilly Repair & Supply Co., James....New York.
Upson-Walton Co. .....Cleveland.

SHIP LANTERNS AND LAMPS.

Helvig, H. A. J.....New York.
Page Bros. & Co.....New York.
Russell & Watson.....Buffalo.

SMOOTH-ON COMPOUND, FOR REPAIRS.

Smooth-On Mfg. Co. .....Jersey City, N. J.

SPARS—LARGE SIZES.

Moran Bros. Co.....Seattle, Wash.

STAYBOLTS, IRON OR STEEL, HOLLOW, OR SOLID.

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.

STEAM VESSELS FOR SALE.

Elwell, Jas. W. & Co.....New York.
Holmes, Samuel.....New York.
King, Rufus S.....New York.
McCarthy, T. R.....Montreal, Can.
Newman, R. L.....New York.
Weeks, F. H.....New York.

STEAMSHIP LINES, PASS. AND FREIGHT.

American Line.....New York.
Erie & Western Trans. Co. .....Buffalo.
International Nav. Co.....Philadelphia.
Pere Marquette R. R. & S. S. Line.....Milwaukee.
Red Star Line.....New York.

STEEL CASTINGS.

Seaboard Steel Casting Co.....Chester, Pa.
Macbeth Iron Co.....Cleveland.

STEERING APPARATUS.

American Ship Building Co.....Cleveland.
Chase Machine Co. .....Cleveland.
Dake Engine Co.....Grand Haven, Mich.
Detroit Shipbuilding Co.....Detroit.
Electro-Dynamic Co.....Philadelphia.
Hyde Windlass Co.....Bath, Me.
Jenks Ship Building Co.....Port Huron, Mich.
Sheriff Mnfg. Co.....Milwaukee.

STOCKS, BONDS, SECURITIES.

Brown, W. W.....Cleveland.
Fahey & Co.....Cleveland.

SUBMARINE DIVING APPARATUS

Morse & Son, A. J.....Boston.
Schrader's Son, A.....New York.

SURVEYORS, MARINE.

Gaskin, Edward.....Buffalo.
Newman, R. L.....New York.
See, Horace.....New York.
Wood, W. J.....Chicago.

TESTS OF MATERIAL.

Hunt, Robert W. & Co.....Chicago.
Pittsburg Testing Laboratory, Ltd.....Pittsburg.

TILING, INTERLOCKING RUBBER.

New York Belting & Packing Co.....New York.

TOOLS, METAL WORKING, FOR SHIP AND ENGINE WORKS.

Allen, John F.....New York.
Chicago Pneumatic Tool Co.....Chicago.
Watson-Stillman Co.....New York.

TOOLS, WOOD WORKING.

Atlantic Works, Inc.....Philadelphia.

TOWING MACHINES.

American Ship Windlass Co.....Providence, R. I.
Chase Machine Co.....Cleveland.

TOWING COMPANIES.

Donnelly Salvage & Wrecking Co....Kingston, Ont.
Midland Towing & Wrecking Co., Ltd.Midland, Ont.

TRAPS, STEAM.

Kieley & Mueller.....New York.

TRUCKS.

Boston & Lockport Block Co..... .....Boston.

TUBING, SEAMLESS.

National Tube Co.....Pittsburg.
Waterbury Brass Co.....New York.

VALVES, STEAM SPECIALTIES, ETC.

American Steam Gauge Co. .....Boston.
Ashton Valve Co. .....Boston.
Crane Co. .....Chicago.
Farnan Brass Works .....Cleveland.
Hayden Mfg. Co., N. L.....Columbus, O.
Jenkins Bros.....New York.
Kieley & Mueller.....New York.
Lunkenheimer Co.....Cincinnati.
Ross Valve Co. .....Troy, N. Y.

VALVES FOR WATER AND GAS.

Wood & Co., R. D.....Philadelphia.
Ross Valve Co. .....Troy, N. Y.

VARNISHES.

Berry Brothers, Ltd.....Detroit.
New Jersey Zinc Co.....New York.
Also Ship Chandlers.

VESSEL CASTINGS.

American Ship Building Co.....Cleveland.
Macbeth Iron Co.....Cleveland.

VESSEL FURNISHINGS.

Sterling & Welch Co., ... Cleveland
Williams & Rodgers Co., The..... ..Cleveland

VESSEL AND FREIGHT AGENTS.

Boland, John J.....Buffalo.
Brown & Co.....Buffalo.
Brown, W. W.....Cleveland.
Dunham, R J..... .....Chicago.
Elwell, Jas. W. & Co.....New York.
Elphicke, C. W & Co.....Chicago.
Fleming & Co., P. H.....Chicago
Hall & Root.....Buffalo.
Helm & Co., D. T. .....Duluth.
Hawgood & Co., W. A.....Cleveland.
Holmes, Samuel.....New York.
Hutchinson & Co.....Cleveland.
King, Rufus S.....New York.
McCarthy, T. R.....Montreal.
Newman, R. L.....New York.
Mitchell & Co.....Cleveland.
Richardson, W. C.....Cleveland.
Sullivan, D. & Co.....Chicago.
Weeks, F. H.....New York.

VENTILATING APPARATUS FOR SHIPS.

Buffalo Forge Co. .....Buffalo.
Sturtevant, B. F. Co.....Boston.

WIRE—BRASS AND COPPER.

Waterbury Brass Co.....New York.

WIRE ROPE AND WIRE ROPE FITTINGS.

Baker, H. H. & Co.....Buffalo.
DeGrauw, Aymar & Co. .....New York
Upson-Walton Co.....Cleveland.

WHISTLES, STEAM.

American Steam Gauge Co. .....Boston.
Ashton Valve Co. .....Boston.
Farnan Brass Works .....Cleveland.
Lunkenheimer Co.....Cincinnati.

WHITE METAL—SHEETS, RODS AND WIRE.

Waterbury Brass Co.....New York.

WINDLASSES.

American Ship Windlass Co.....Providence, R. I.
American Ship Building Co. .....Cleveland
Hyde Windlass Co.....Bath, Me.
Jenks Ship Building Co.....Port Huron, Mich.

WINCHES.

American Ship Windlass Co.....Providence, R. I.
Hyde Windlass Co.....Bath, Me.

WOOD WORKING MACHINERY.

Atlantic Works, Inc.....Philadelphia.

WRECKING AND SALVAGE COMPANIES.

Donnelly Salvage & Wrecking Co....Kingston, Ont.
Midland Towing & Wrecking Co., Ltd.Midland, Ont.

YACHT AND BOAT BUILDERS.

Drein, Thos. & Son.....Wilmington, Del.
Lane & DeGroot.....Long Island City, N. Y.
Marine Construction & Dry Dock Co. ...New York.
Truscott Boat Mfg. Co. .....St. Joseph, Mich.
Warrington Iron Works.....Chicago.
Willard, Chas. P. & Co.....Chicago.

YAWLS.

Drein, Thos. & Son.....Wilmington, Del.
Lane & DeGroot.....Long Island City, N. Y.

ALPHABETICAL INDEX OF ADVERTISERS IN THE MARINE REVIEW AND MARINE RECORD.

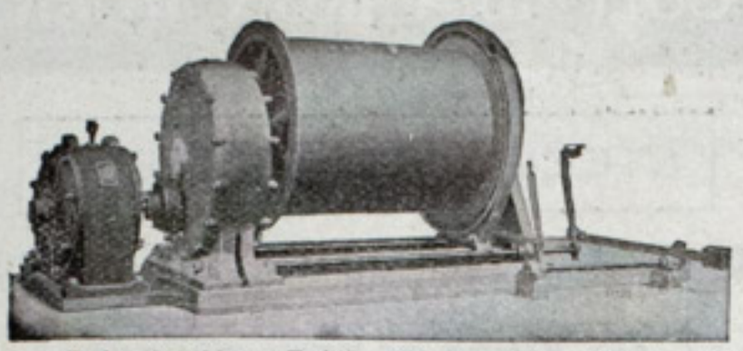
The star (*) indicates that the advertisement appears alternate weeks. For addresses see advertisements on pages noted.

MARINE REVIEW

WEEKLY.] AND MARINE RECORD. [ESTABLISHED, 1878.

VOL. XXVII. CLEVELAND, O., APRIL 23, 1903. No. 17.

Westinghouse Induction Motors



Westinghouse Induction Motor Driving Enclosed Gear Friction Drum Hoist

Adaptable to any class of work and will do the work more economically and efficiently than by any other method.

Circular 1050 gives particulars.

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No Cog Wheels to Warp or get out of order.

Don't take our word for it but ask some one using them.

Russell & Watson,

BUFFALO, N. Y.

General Steamboat Work
Send for Catalogue.

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H. C. Weber & Co., Detroit, Mich.
John Black, So. Chicago, Ill.
Pritzlaff Bros., Milwaukee, Wis.

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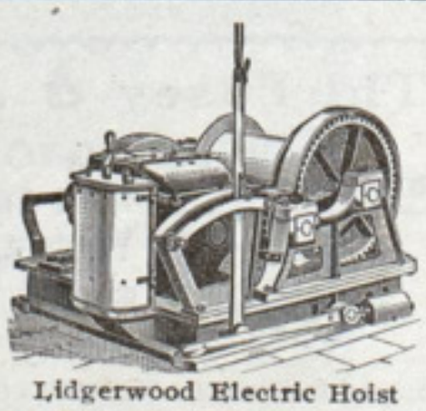
OVER 21,000 IN USE.



Lidgerwood Electric Hoist

ELECTRIC HOISTS

Specially adapted for Docks, Warehouses and Steamships.

LIDGERWOOD MILLER MARINE CABLEWAY

will transfer Coal, Ammunition Supplies, etc. from ship to ship at sea.

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W. H. H. MOORE, Treasurer. W. IRVING COMES, Secretary.

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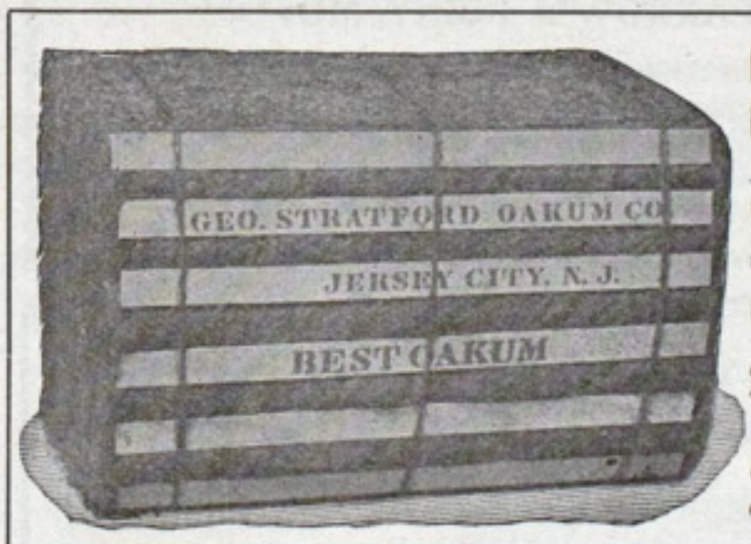
FOR DETERMINING

HORSE POWER,
SIZE OF CYLINDERS,
DENSITY, TEMPERATURE,
LATENT HEAT OF STEAM.

Has sold in great numbers at $1 each.

OFFERED AS A PREMIUM WITH ONE YEAR'S SUBSCRIPTION TO THE MARINE REVIEW AND MARINE RECORD AT $3.00.



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Spun Cotton.

For sale at Ship Chandlers everywhere.

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Steam Shovel Chains, Boom Chains, Etc.

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